DOCUMENT RESUME

ED 116 053 CE 006 150

TITLE	A Longitudinal Study of Vocational Development and Program Evaluation. Implications for Curriculum Planning and Vocational Guidance. Final Report.
INSTITUTION	Pennsylvania State Univ., University Park. Dept. of Vocational Education.
SPONS AGENCY	Pennsylvania State Dept. of Education, Harrisburg. Bureau of Vocational, Technical, and Continuing Education.
REPORT NO	VT-102-361
PUB DATE	Aug 74
NOTE	172p.; Pages 128-30 are of marginal reproducibility; Several appended questionnaires were deleted because they are copyrighted
EDRS PRICE	MF-$0.76 HC-$8.24 Plus Postage
DESCRIPTORS	Data Collection; Educational Research; *Longitudinal Studies; Program Evaluation; *Research Reviews (Publications); Secondary Education; *Vocational Development; *Vocational Education; Vocational Interests
IDENTIFIERS	Monographs; Pennsylvania; *Vocational Development Study

ABSTRACT

The report is an accounting of activities of the Vocational Development Study (VDS) project during the three-year funding period of July 1971 to July 1974. The longitudinal study, planned to cover a 10-year span, was begun in the fall of 1968. The project was developed to identify the effects of the high school experience on youth in vocational guidance. The sample consisted of the total ninth grade enrollment in three medium-sized Pennsylvania school districts--Altoona, Hazleton, and Williamsport. Data were collected at several stages through standardized aptitude and achievement tests and inventories of interests, values, and vocational development. Information on family and environmental background, occupational and educational aspirations, as well as school-generated data were also collected and analyzed. The report presents the background of the project and describes procedures involved in sample selection and data collection, handling, and storage. The VDS project resulted in 20 published research monographs and numerous papers and articles. Copies of the monographs and papers and a list of the articles are included in the report. In addition, a one-year graduate followup survey was made of the Altoona class. Several questionnaires are appended. (NJ)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED116053

THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF VOCATIONAL EDUCATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

FINAL REPORT

A LONGITUDINAL STUDY OF VOCATIONAL DEVELOPMENT AND PROGRAM EVALUATION: IMPLICATIONS FOR CURRICULUM PLANNING AND VOCATIONAL GUIDANCE

July 1, 1971 to June 30, 1972 (Project Number 19-1013)
July 1, 1972 to June 30, 1973 (Project Number 19-2007)
July 1, 1973 to June 30, 1974 (Project Number 19-3001)

(VT-102-361)

JEROME T. KAPES, PROJECT DIRECTOR
THOMAS E. ENDERLEIN, PROJECT COORDINATOR
RANDALL B. MARTIN, PROJECT GRADUATE ASSISTANT

The Pennsylvania State University
University Park, Pennsylvania

August, 1974

VOCATIONAL—TECHNICAL EDUCATION Research Report

Pennsylvania Department of Education
Bureau of Vocational, Technical and Continuing Education

LE 00 6 150

ACKNOWLEDGEMENTS

As VDS project director since the death of Dr. Joseph T. Impellitteri in May of 1972, I feel a strong desire to express my gratitude to all of those who have worked so hard to bring the project to its current level of success. Although RCU funds for the project have been provided only since April of 1971, I feel it appropriate to acknowledge all those who worked with the project since its beginning in the Fall of 1968. I believe that I can, and indeed must, pay tribute not only on my own behalf, but also on behalf of Joe Impellitteri who was the major force behind the project since its beginning and whose memory continues to inspire all those who knew him and have worked with him on the project. To the extent that the project has been instrumental in bringing about positive changes in Vocational Education and Guidance in the State and Nation, it is a fitting tribute to Joe's memory. To the extent that it has failed to accomplish all that Joe had envisioned is only testimony to the inadequacies of those who have endeavored to continue it.

Because of the difficulty in recalling all of the names of the large number of individuals who have worked with the project, it is inevitable that many will be wrongly omitted. Nevertheless, what follows is an honest attempt to include all those who were involved at least by their titles and functions, if not by names. First, among those who were instrumental in supporting the project are the administrative personnel from the three school systems involved. These include, from the Altoona School District, the past and current Superintendents, Drs. Thomas Heslop and Charles Hill, AVTS Director Daniel Clark, and his guidance staff, Herbert Bolger and

Lanny Ross; from the Hazleton School District, the past and current Superintendents, Dr. Henry Patterson, Juleius Schneider and Daniel Parrell, AVTS Director Paul Wensko, and his guidance staff, Nancy Gilgannon, Tony Merdocca and Gene Kapes; from the Williamsport School District, Superintendent Oscar Knade and Assistant Superintendent George Teufel, AVTS Director Kenneth Carl and the Williamsport guidance staff in the persons of Glenn Lunger, Bob Gerhig and Weldon Michael.

Secondly, the Bureau of Vocational Education is to be commended for their willingness to support a project of such a long duration. Through the Pennsylvania Research Coordinating Unit (RCU) in Vocational Education and especially its past and present directors, Drs. Ferman Moody and Carroll Curtis, both the financial and advisory support necessary for the survival of the project has been provided.

Finally, the staff of the project and the Department of Vocational Education deserve special mention since it was these individuals who actually carried on the many tasks both large and small which resulted in the totality of the project's accomplishments.

The following is a list of the graduate students who have worked with the project in some major way along with their project title, dates of involvement and their obtained and/or expected degree:

Name	Title	Dates	Degree
Richard H. Brown	Graduate Student	1/73 - 9/73	M.Ed.
Frank Charg	Graduate Assistant	1/74 - 6/74	Ph.D.
Thomas E. Enderlein	Graduate Assistant Research Assistant	9/71 - 6/74	Ph.D.
Theodore A. Hill	Research Assistant	7/71 - 6/73	D.Ed.*
Leo W. Lotowycz	Graduate Assistant	9/70 - 4/72	M.S.
Kendall B. Martin	Graduate Assistant	6/71 - 6/74	M.S. - Ph.D.*
Bernard M. McAlister	Graduate Assistant	9/71 - 3/73	M.S. - Ph.D.*
Paul L. McQuay	Graduate Assistant	9/73 - 6/74	M.S. - Ph.D.*
Patrick A. O'Reilly	Research Assistant	9/71 - 6/73	Ph.D.
Vladimir Pawlowski	Graduate Assistant	9/73 - 4/74	M.Ed. - Ph.D.*
Robert D. Rollins	Graduate Assistant	12/73 - 6/74	D.Ed.*
Lanny F. Ross	Graduate Student	9/72 - 6/74	D.Ed.*
Lynn M. Schowalter	Graduate Assistant	6/73 - 6/74	M.S.
Norman W. Sievert	Graduate Assistant	9/68 - 9/70	D.Ed.
Robert E. Strickler	Graduate Assistant	6/72 - 9/73	M.S.
S. Richard Vierstiner	Graduate Assistant	1/69 - 6/69	Ph.D.

*Expected degree

In addition to the many graduate students who have worked with the project, many other support staff including key punchers, data collectors and project and departmental secretaries have invested many long and laborious hours in the project. The list of these people is much too long to include here, but each one knows how valuable their assistance has been. Special mention is however, due to our project secretaries Debbie Hydenthal,

Debbie Davidson and Kris Sefchick for their patience and diligence in typing the many correspondence and project papers and reports.

With this final report the leadership of the project will again change hands with Dr. Edwin L. Herr assuming the position of project director with Dr. Thomas E. Enderlein as project coordinator. Under this new leadership there is every reason to expect the VDS Project to be even more fruitful in the future.

Jerome T. Kapes, Assistant Professor
Graduate Studies and Research
Department of Vocational Education
VDS Project Director

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS ii
LIST OF TABLES ix
LIST OF FIGURES x

Chapter
I. ORIGIN OF THE VDS PROJECT 1
Introduction 1
Background of the Problem 3
The Developmental Framework 4
The Framework as Applied to Vocational Education 4
The Developmental Framework as an Approach to the Evaluation of Vocational Education 6
Specification of the Problem 7

II. PROCEDURES 15
Study Sample 15
Data Collection 16
Altoona 16
Hazleton 17
Williamsport 19
Instruments, Questionnaire and Other Data Collection Materials Standard 19
General Aptitude Test Battery 23
Differential Aptitude Tests 25
Occupational Values 27
Stanford Achievement Test 28
Vocational Development Inventory 30
Ohio Vocational Interest Survey 30
Metropolitan Achievement Test 34
Attendance 34
Occupational Interest Inventory 35
California Test of Mental Maturity 36
Biographical Information 38
Hobbies and Interests 40
Educational Plans 40
Occupational Plans 40
School Generated Data 41
Other Specialized Instrumentation 42
Data Handling and Storage 44
Data Coding 44
Editing 45
Data Storage 47
Data Tape Layout 49

Page

III. RESEARCH STUDIES CONDUCTED AND DISSEMINATION 51
Introduction 51
Vocational Development Study Series. 53
VDS Capsule Monograph Number 2 56
Findings 56
Possible Implications. 57
VDS Capsule Monograph Number 3 60
Rationale for the OVI. 60
Construction of the OVI. 61
OVI Reliability Studies. 62
OVI Validity Studies 62
VDS Capsule Monograph Number 4 64
Findings 64
Implications 65
VDS Capsule Monograph Number 5 67
Findings 67
Implications 68
VDS Capsule Monograph Number 6 69
Findings 69
Implications 70
VDS Capsule Monograph Number 7 72
Findings 72
Implications 73
VDS Capsule Monograph Number 8 76
Findings 76
Implications 77
VDS Capsule Monograph Number 9 78
Findings 78
Implications 79
VDS Capsule Monograph Number 10. 81
VDS Capsule Monograph Number 11. 84
VDS Capsule Monograph Number 12. 87
VDS Capsule Monograph Number 13. 90
Rationale for the Study. 90
Findings 91
Implications 91
VDS Capsule Monograph Number 14. 95
Findings 95
Implications 96
VDS Capsule Monograph Number 15. 98
Findings 98
Implications 99
VDS Capsule Monograph Number 16. 101
Findings 101
Implications 102

Page

VDS Capsule Monograph Number 17 104
Findings. 104
Implications. 105
VDS Capsule Monograph Number 18 107
Findings. 107
Implications. 108
VDS Capsule Monograph Number 19 110
VDS Capsule Monograph Number 20 113
Rationale for the Study 113
Findings. 113
Implications. 115
Other Publications. 118
Articles Based on Project Data. 119
Other Related Papers. 119
One Year Follow-up Questionnaire and Procedure. 120
Dissemination of Project Publications 125
Publicity 127
PSU Discovers Drawing Card For Survey 128
Career Study Begun at Vo-Tech As Part of Penn State Sampling. 129
VDS Is Nothing To Be Afraid Of. 130

IV. IMPACT OF THE OVERALL PROJECT 131
Introduction. 131
Contributions to School Systems Involved. 131
Overall Contributions 134

APPENDICES. 140

APPENDIX A. 141
APPENDIX B. 148
APPENDIX C. 150
APPENDIX D. 152

LIST OF TABLES

Table — Page

1. Altoona Data and Dates of Collection 20
2. Hazleton Data and Dates of Collection. 21
3. Williamsport Data and Dates of Collection. 22
4. Response to Altoona Follow-up Questionnaire for Class of 1972. 123
5. Monograph Requests 126

LIST OF FIGURES

Figure		Page
1.	Flow Diagram of Questionnaire Mailing Strategy.	18
2.	Data Collection Flow Diagram.	48
3.	Flow Diagram of Questionnaire Mailing Strategy.	121

I

ORIGIN OF THE VDS PROJECT

Introduction

The Vocational Development Study (VDS) Project was conceived and began in the Department of Vocational Education at The Pennsylvania State University in the Fall of 1968. Beginning in the Spring of 1969 data was first gathered from the ninth grade class in Altoona, Pennsylvania. In the Spring of 1971 similar data was gathered from the ninth grade classes in Hazleton and Williamsport. As the vision of a ten year longitudinal study of the vocational development process began to take form in the minds of the faculty and graduate students then in the Department of Vocational Educationtion at Penn State, a decision was made to request funds for the Project from the State Research Coordinating Unit (RCU) in Vocational Educatior. Up until that time, the project had been supported with departmental and university research funds. Beginning in April of 1971 the state RCU committed funds to the VDS Project and these funds continued over the subsequent three year period.

This report is an accounting for the Project activities during that three year period. The report is entitled a Final Report, but it is final only in the sense that it brings to a close the three year f nding period. The report includes descriptions of many of the activities which took place before RCU funding and is intended to strongly imply that the project will continue for the additional time period necessary to complete the ten year commitment in each of the three school systems involved.

Twenty separate research monographs in addition to many papers and articles have resulted from the VDS project activities. Given the nature of the project, this report does not deal directly with the studies described in these monographs except in capusle form. The report is intended as a overview of the entire project activities many of which do not result in publications. Procedural matters involving the collection and handling of data are dealt with extensively in the hope that this information can be useful to other researchers as well as practitioners in education as they attempt to find solutions to both basic and applied problems in the future. The measuring instruments, questionnaires and other data collection materials used in the conduct of the project are also described and included in Appendix form. Additional appendicized items include information about the data tape layout for each of the three VDS samples (Altoona, Williamsport, and Hazleton), a complete set of all papers presented at national and state conventions, and a tabulation of all responses to the one year follow-up questionnaire for the Altoona sample.

Although a brief overview of the background and objective of the VDS project is provided in the following section of this report, the reader is referred to VDS monograph number 1 (A Longitudinal Study of Vocational Development: Implications for Vocational Education and Guidance) for the complete rationale and design for the project. Other information concerning the project can be obtained from: The VDS Project Director; The Department of Vocational Education, 250 Chambers Building, University Park, Pennsylvania 16802.

Background of the Problem

During the decade of the 1960's there has been ample evidence and increasing agreement that both formal and semi-formal educational and training opportunities should be made available to all members of our society. The nature and intent of the federal legislation dealing with support of educational and training programs passed during that period have tended to render obsolete the notion of "terminal education." Some combination of education and training is currently conceived to be a life-long process for most individuals in all roles of life--the professional, the technician, the skilled craftsman, the housewife, the semi-skilled factory worker, the clerical worker, the businessman, etc. A significant factor in bringing about this condition is the rapidly changing nature of our highly technological society. First, the individuals making up the society have a greater need for more education and training in order to succeed within it, regardless of the criteria utilized in measuring the attainment of that success. Second, in order for it to progress, the society itself produces an ever-increasing demand for persons with higher levels of skills and competencies which are attained only through additional education and training.

Given this condition of the contemporary "adult world" within which the school youngsters of today will eventually find themselves, how can they be better prepared to successfully enter it? What significant implications growing out of the societal condition, as described, may be helpful to those responsible for the preparation of our youth?

The Developmental Framework

The response to the previous questions provide the basis upon which a conceptual framework may be designed for use in studying the problem. The individual in today's society must be primarily visualized as evolving. Given the necessity of continuing education and training during most of his life, he is the sum total of what he is plus what he is becoming. The notion of education, then, as preparing youth for an activity or set of activities with which he will occupy himself for the remainder of his life is unacceptable. Education must prepare a youngster to enter society as a responsible and contributing member, but it also must develop in him the awareness that upon entry into that realm he should be ready and willing to adapt. Such a conception of the individual evolving over time, which may be referred to as the developmental framework, prompts the educator to formulate his educational objectives and consequent programs in the same frame.

The Framework as Applied to Vocational Education

For those educators charged with the responsibility for developing and implementing the career-oriented phase of the total school curriculum, the developmental framework holds particular potential. Support for this contention lies in the fact that an individual's vocational behavior is the most direct manifestation of his total development (Jordaan; Starischevsky; Super; 1963). Yet, so little is known about the process of the vocational development of both youth and adults, and the nature of various factors related to it (Holland and Whitney, 1969) that vocational educators are rightfully dubious about the usefulness of vocational development theory.

How are they to devise vocational programs which take vocational development into account, when the conceptual handles from which such programs would proceed are insufficiently established?

Several noteworthy research studies have been conducted to explore the nature of vocational development (Super; Gribbons and Lohnes; Cooley and Lohnes; etc.). In their lack of orientation to vocational education opportunities, however, they have ignored the potential applications to that field. Given their exclusion of the impact of existing vocational education programs, the findings of these investigations have little practical applicability to it.

In an extensive review of selected research and evaluative studies in vocational and technical education Little (1970) has recently recommended that the void which exists must be filled:

> One important need is for a comprehensive longitudinal study of the in-school and post-school careers of cohorts of persons who move through the educational system along different paths. It would seem that it is as important to know what happens to the generality of youth in the educational system as to learn about the gifted as seen in the Terman studies of genius, or in the more recent Project TALENT (Little, 1970, p. 37).

Interpretation of Little's recommendation leads one to the necessity for studying a significantly large group of pre-vocational students through their experiences in the vocational program, and through their post-school experiences as well. Yet, how does one go about identifying the pre-vocational junior high school student? Given that only 15-20 percent of the youngsters who start senior high school eventually receive four-year college degrees, 80-85 percent of a ninth grade population may be viewed as potential vocational students in the broad sense of the term. The most reasonable procedure which would allow a determination of the effects of

vocational education in relative and absolute terms is to start with a sample including the entire cross-section of junior high school students. Utilizing this procedure certain problems such as tracing the movement of youngsters in and out of the vocational program at various times may be surmounted.

The Developmental Framework as an Approach to the Evaluation of Vocational Education

In examining and analyzing the various vocational stages of an individual's development from his junior high school years through the first seven years after his scheduled graduation from high school, information can be obtained that not only provides for description, but also for evaluation. Typical follow-up or evaluative studies in vocational education as exemplified by recent reports by Eninger (1968), Kaufman, et al. (1967), Little (1967), Mallinson (1968), and Kaufman and Lewis (1968), are concerned only with the out-of-school experiences of vocational education graduates. Their failure to provide information regarding the nature of the inputs to the vocational education program (the type of youngster who typically selects such programs) so that valid inferences regarding effects of the program may be made, is of major significance. Knowledge of the type of input into the vocational program takes on added importance given the dictates of the Vocational Amendments of 1968, that vocational education shall be charged with meeting the needs of the "disadvantaged" as well as other sectors of our society. The value of input data and developmental data along a time continuum is thus of primary importance when considered in this context. Failure to provide such data within the evaluative model will certainly lead to faulty assessments.

In the developmental model program outcomes in terms of selected affective and achievement variables at one grade level become part of the input in order to assess the outcomes of the experience at the next grade level. At each stage where relevant data are collected, the same data may be viewed as both output and input. This procedure allows not only for the interpretation of the effectiveness of the complex package (say, a three-year auto mechanics program), but also for the evaluation of any portion of the complete package of sufficient importance to be isolated from it.

Specification of the Problem

It was upon the rationale developed in the previous section that the Department of Vocational Education at The Pennsylvania State University initiated a long-range research program in cooperation with responsible personnel from the Altoona School District and the Altoona Area Vocational-Technical School during the late fall of 1968. At its initiation this research program was conceived to be the first phase of a multiphase effort, the following two stages being undertaken during the 1970-71 academic year in which the cooperation of the Williamsport School District and the Hazleton School District was obtained.

This research study, planned to cover a ten-year span, has been designed to examine two distinct areas of concern: those that have implications for curriculum evaluation, and those having implications for vocational guidance. These two problem areas are presented and described within this subsection in an outline form. The design incorporates three separate analyses for each specific problem (one for each sample), resulting in a double cross-validation.

I. Problems having curriculum evaluation implications

A. Time$_1$ (T_1) when sample [Altoona (A), Hazleton (H), and Williamsport (W)] leave ninth grade and begin tenth grade.

1. The nature of the inputs into the various curriculums [Vocational (total, plus each distinct shop or laboratory area)/Academic/General/Business/Home Economics] in terms of the variables are listed below:

a. Personal

i. Cognitive

(a) Aptitude

(b) Achievement

ii. Affective

(a) Vocational Maturity

(b) Occupational Values

(c) Tentative occupational aspirations

(d) Tentative educational plans

(e) Interests and hobbies

iii. Experiential

(a) School attendance record (grades 7-9)

(b) School grade record (Grades 7-9)

(c) Health status

(d) Other personal factors

b. Environmental

i. Socioeconomic status of family

ii. Father's and mother's occupational status and level

iii. Father's and mother's educational status and level

iv. Number of siblings in family unit

v. Characteristics of the regional labor market

vi. Other miscellaneous environmental influences

2. A comparison and analysis of the differences in those characteristics listed in #1 between the five major curriculums and among the distinct vocational shop or laboratory areas.

B. T_2, when sample (A, H and W) completes tenth grade

1. An analysis of the differential effects of the programs (Vocational/Academic/General/Business/Home Economics) upon students' changes in vocational maturity level, changes in occupational values, changes in occupational aspirations and educational plans, the stability of occupational aspirations over time, the stability of educational plans over time, their stated satisfaction level with the program they have entered, and their self-concepts when the effects of significant variables listed in A.1. are considered.

2. Analysis of the differential effects of the individual vocational shop and laboratory courses of study (auto mechanics, auto body, carpentry, machine shop, etc.) upon those same changes as referred to in #1, immediately above.

3. An analysis of the relationship between the characteristics listed in #1 and degree of success in each curriculum.

C. T_4, when sample of vocational students (A, H and W) in selected shop and laboratory areas complete twelfth grade.

1. An analysis of the differential effects of the individual vocational shop and laboratory courses of study upon achievement on the Ohio Trade Achievement Test (OTAT) when compared to a national norm.

2. An exploration and validation of the OTAT in terms of its relationship with shop grades, mechanical aptitudes, prior achievement, and degree of work experience possessed by the sample.

D. T_5, when samples (A, H, W) after graduation have been out of school for approximately one year

1. An analysis of the differential effects of the programs (Vocational/Academic/General/Business/Home Economics) upon the students' occupational or educational status, occupational or educational mobility, occupational or educational performance, and degree of satisfaction with current occupational or educational pursuits, when the effects of significant variables listed in A.1 and B.1 are considered.

2. An analysis of the differential effects of the individual vocational shop and laboratory courses of study (auto

mechanics, auto body, carpentry, machine shop, etc.) upon those same dependent variables listed in D.1.

E. T_6, when samples (A, H, W) after graduation have been out of school for approximately four years

1. An analysis of the differential effects of the programs (Vocational/Academic/General/Business/Home Economics) upon the students' occupational or educational status, occupational or educational mobility, occupational or educational performance, and degree of satisfaction with current occupational or educational pursuits, when the effects of significant variables listed in A.1, B.1 and D.1 are considered.

2. An analysis of the differential effects of the individual vocational shop and laboratory courses of study (auto mechanics, auto body, carpentry, machine shop, etc.) upon those same dependent variables listed in E.1.

F. T_7, when samples (A, H, W) after graduation have been out of school for approximately seven years

1. An analysis of the differential effects of the programs (Vocational/Academic/General/Business/Home Economics) upon the students' occupational or educational status, occupational or educational mobility, occupational or educational performance, and degree of satisfaction with current occupational or educational pursuits, when the effects of significant variables listed in A.1, B.1, D.1, and E.1 are considered.

2. An analysis of the differential effects of the individual vocational shop and laboratory courses of study (auto mechanics, auto body, carpentry, machine shop, etc.) upon those same dependent variables listed in F.1.

II. Problems having vocational guidance implications

A. Validation of a variety of tests and inventories with potential for the guidance of students in the selection of various school programs.

1. The General Aptitude Test Battery (GATB): Because this test is currently emerging as a popular instrument to be utilized in selection of students for specific vocational programs, evidence as to its reliability at the ninth grade and validity for that stated purpose will be examined. A stability coefficient for each of the nine aptitudes will be calculated between ninth grade (form B) and twelfth grade (form A) based on the sample of students from Altoona. In addition, various empirical and construct validities will be obtained.

2. The Occupational Values Inventory (OVI): Because of the absence of values measures which are reliable for use with ninth graders, and valid for career relevant guidance, the OVI will be examined in terms of its: internal consistency; stability over two, four and six weeks, one and two years; factorial validity; predictive

validity in terms of occupational and educational achievement and satisfaction; and a variety of concurrent and construct validities.

3. The Ohio Vocational Interest Survey (OVIS): Because this instrument's design was based upon an occupational framework (the D.O.T.'s data-people-things) it was included as relevant for use with ninth graders. Since it has only been recently developed, however, little evidence is available to support its validity for vocational guidance purposes. The OVIS thus will be examined in terms of its various concurrent, predictive and construct validities.

4. The Vocational Preference Inventory (VPI): Since the VPI allows for measuring both the individual's career orientation and the occupational orientation of the environment (both school and work) it is planned for inclusion in the proposed study. There is meager evidence, however, relating to its use for the vocational guidance of ninth and tenth graders. It is proposed that the various concurrent, predictive, and construct validities of the VPI be examined.

5. The Vocational Development Inventory (VDI): As one of the few estimates of vocational maturity, the VDI has been widely field-tested and normed. Based on its potential use in the vocational guidance of youth, the validity of the VDI for predicting job satisfaction and job performance will be examined.

B. Determine the nature and stability of career paths (including intentions and actual experiences) plotted over time, as related to selected student characteristics (general school achievement index, SES of family, aptitudes, interests, vocational maturity, type of school program entered at tenth, grade, occupational values, etc.

1. What are the differentiating characteristics of those students who exhibit a highly stable career path (measured in terms of occupational level and field)?
2. What are the differentiating characteristics of those students who exhibit a highly unstable career path (measured in terms of occupational level and field)?
3. What are the differentiating characteristics of those students who exhibit a stable career path in terms of level, but vary in terms of field?
4. What are the differentiating characteristics of those students who exhibit a stable career path in terms of field but vary in terms of level?
5. What are the differentiating characteristics of those students who select entry occupations which require an extensive delay of gratification?
6. What are the differentiating characteristics of those students who select entry occupations which require little delay of gratification?

II

PROCEDURES

Study Sample

The Department of Vocational Education at The Pennsylvania State University undertook a ten-year longitudinal Vocational Development Study (VDS) in the Fall of 1968. The project was developed to identify the effects of the high school experience on youth and relate the knowledge to curriculum planning and vocational guidance.

The sample selected consists of the total ninth grade enrollment in three medium sized Pennsylvania school districts: Altoona (A), Hazleton (H) and Williamsport (W).

In designing the study, an attempt was made to select schools with a large vocational-technical school enrollment, thereby making the choice of a vocational program a realistic alternative. It was felt that an attempted 100 percent sample of three large school systems would combine many of the advantages of Super's Career Pattern Study which used a small sample and the advantages of Project Talent's large sample.

Data is being retained for any student dropout or any student who transfers out of the school district. Though complete data is available on this type of individual, sufficient information may be present for particular investigations. To make the present data as complete as possible, considerable effort has been expended in make-up and follow-up activities. For those students who have been part of the sample throughout the entire

time period investigated, the data is virtually complete. Overall, of all the students who have ever participated in the sample, data exists for about 85 percent of any sample on any single variable.

Data Collection

Tables 1, 2 and 3 list the characteristics identified as important variables in the overall study and the points in time that data were collected for each sample, Altoona, Hazleton, and Williamsport.

Altoona

The first sample selected was the Altoona Area High School Class of 1972. The parochial high school students were not included in this investigation.

Initial data on the Altoona students were collected in the Spring of 1969 when the sample was completing ninth grade. At that time, student abilities, interests, values, and biographical information were tested and inventoried (see Table 1). During the Summer of 1969, junior high school records were reviewed and additional data collected. In the Spring of 1970, near the end of the student's tenth grade year, the project staff again inventoried student abilities, interests and values. During the twelfth grade, Spring 1972, tests and inventories were repeated with the addition of a questionnaire designed to obtain student viewpoints on several school and curriculum variables. In the Summer of 1972 the Altoona student records were reviewed and senior grades, class rank and aptitude test scores were

recorded. The most recent data collection, Spring 1973, was the one year follow-up which consisted of a student questionnaire and a questionnaire for selected employers of graduates currently employed (see Figure 1 for Procedures of Follow-up).

The size of the Altoona sample is approximately 1,200 students. Data were collected for all students in the 1972 graduating class beginning with those enrolled in ninth grade in 1969 and including any student who came into the sample before the class graduated in 1972. During the initial data collection the students were attending one of the three Altoona junior high schools, Keith, Logan or Roosevelt. During tenth through twelfth grade, all students in the sample attended Altoona High School or attended both the high school and the adjacent Vocational Technical School.

Hazleton

The Hazleton area sample was added to the project in 1970. All high school students from three public high schools and one parochial high school who will graduate as the classes of 1974 were included in the sample. The Hazleton area sample consists of approximately 1,000 students.

Initial data on the Hazleton students were collected in the Spring of 1971 when the sample was completing ninth grade (see Table 2). At that time student abilities, interests, values, and biographical information were tested and inventoried. During the Summer of 1971, junior high school records were reviewed and student grades, attendance records and other test information were collected. During the Spring of 1972 tenth grade data were

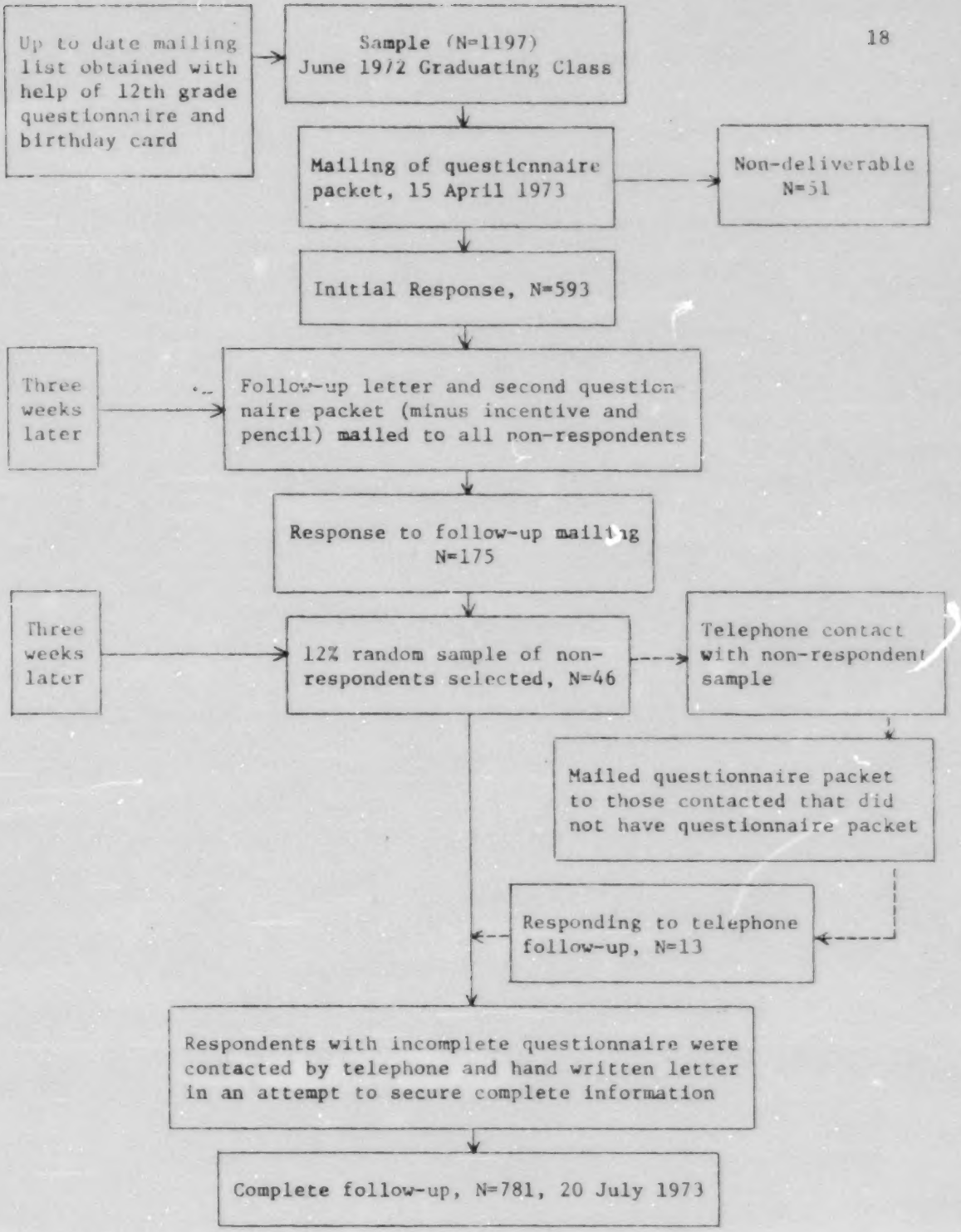

Up to date mailing list obtained with help of 12th grade questionnaire and birthday card
Sample (N=1197) June 1972 Graduating Class
Mailing of questionnaire packet, 15 April 1973
Non-deliverable N=51
Initial Response, N=593
Three weeks later
Follow-up letter and second questionnaire packet (minus incentive and pencil) mailed to all non-respondents
Response to follow-up mailing N=175
Three weeks later
12% random sample of non-respondents selected, N=46
Telephone contact with non-respondent sample
Mailed questionnaire packet to those contacted that did not have questionnaire packet
Responding to telephone follow-up, N=13
Respondents with incomplete questionnaire were contacted by telephone and hand written letter in an attempt to secure complete information
Complete follow-up, N=781, 20 July 1973

Figure 1. Flow Diagram of Questionnaire Mailing Strategy.

collected, and during the Spring of 1974 twelfth grade data were collected. In all cases the data collection was in a similar manner and in the same time framework as the Altoona data collection, thus making the Hazleton sample a replication study of the work done in Altoona.

Williamsport

The third sample selected was the Williamsport Area High School Class of 1972. This sample consists of approximately 900 students. Initial data on the Williamsport students were collected in the Winter of 1970-71 (see Table 3). At that time student abilities, interests, values, and biographical information were tested and inventoried. During the Summer of 1971, junior high school records were reviewed and student grades, attendance records, and other test information were collected. Tenth grade data collection took place in the Spring of 1972. The twelfth grade data collection contained the same tests and inventories that were included in the ninth and tenth grade administrations with the additions of a twelfth grade questionnaire. This questionnaire was the same as that given to the Hazleton sample and is a revised version of the Altoona questionnaire.

Instruments, Questionnaire and Other Data Collection Materials Standard

In order to establish a rationale for the use of certain student characteristics, program characteristics and environmental data in a longitudinal study of this nature, previous studies in vocational development and program evaluation were reviewed. The following is a description of the data and instrumentation selected along with a rationale for why each was selected and how its measures were obtained. Copies of most of the instruments used will be found in Appendix A.

Table 1

Altoona Data and Dates of Collection

Nature of Data	Year	Collected 68-69						
		66-67	67-68	68-69	69-70	70-71	71-72	72-73
	Grade	7	8	9	10	11	12	+1 Yr
School Grades		X	X	X	X	X	X	
Personal Traits				X				
Attendance		X	X	X				
Health Status				X				
Academic Promise Test (APT)			X					
California Test of Mental Maturity (CTMM)			X				X	
California Achievement Test (CAT)			X					
General Aptitude Test Battery (GATB)				X			X (Voc. students only)	
Biographical Information				X				
Hobbies and Interests				X				
Educational Plans				X	X		X	
Occupational Aspirations				X	X		X	
Occupational Values Inventory (OVI)				X	X		X	
Vocational Development Inventory (VDI)				X	X		X	
H. S. Curriculum					X		X	
Vocational Preference Inventory (VPI)						X		
Ohio Trade Achievement Test (OTAT)						X	X	
College Entrance Exam Board (CEEB)							X	
Scholastic Aptitude Test (SAT)							X	
Post H. S. Occupational Status								X
Post H. S. Educational Status								X
Job Satisfaction with H. S. Program								X

Table 2

Hazleton Data and Dates of Collection

Nature of Data	Year	68-69	69-70	70-71	71-72	72-73	73-74	74-75
	Grade	7	8	9	10	11	12	+1 Yr
		Collected 70-71						
School Grades		X	X	X	X	X	X	
Curriculum					x			
OTIS BETA		X						
Stanford Achievement Test (SAT)		X		X				
Differential Aptitude Test (DAT)			X					
Attendance		X	X	X				
Ohio Vocational Interest Survey (OVIS)				X		X		
Biographical Information				X				
Occupational Aspirations					X			
Past High School Educational Plans					X			
Hobbies and Interests				X				
Vocational Development Inventory (VDI)					X			
General Aptitude Test Battery (GATB)				X				
Occupational Values Inventory (OVI)					X			
Vocational Preference Inventory (VPI)						X		
Ohio Trade Achievement Test (OTAT)						X	X	
Vocational Shop Code							X	
High School Comments							X	

Table 1

Williamsport Data and Dates of Collection

Nature of Data	Year	68-69	69-70	70-71	71-72	72-73	73-74	74-75
	Grade	7	8	9	10	11	12	+1 Yr
		Collected 70-71						
School Grades		X	X	X				
Attendance		X	X	X				
California Test of Mental Maturity (CTMM)			X					
Metropolitan Achievement Test (MAT)		X						
Iowa Test of Educational Development				X				
Occupational Interests Inventory			X					
Biographical Data				X				
Occupational Aspirations				X	X			
Post High School Educational Plans				X	X			
Hobbies and Interests				X				
Vocational Development Inventory (VDI)				X	X			
General Aptitude Test Battery (GATB)				X				
Occupational Values Inventory (OVI)				X	X	X		
Curriculum					X			
Vocational Preference Inventory (VPI)						X		
Ohio Trade Achievement Test (OTAT)						X	X	
Ohio Vocational Interest Survey (OVIS)						X		
High School Comments							X	

Almost any study involving students needs to take into account the concept of ability or aptitudes. In choosing an appropriate commercial aptitude battery for this study consideration was given to its appropriateness for vocational as well as academic students. On the basis of previous studies, Impellitteri and Kapes (1969), the General Aptitude Test Battery (GATB) was selected because it contained manipulative as well as cognitive abilities and the manipulative ability scores were shown to be related to vocational students' shop grades. The Differential Aptitude Test (DAT) was made available by the Hazleton School System for that sample, and supplements the GATB data collected by the project.

General Aptitude Test Battery

The General Aptitude Test Battery (GATB) was selected because it contained manipulative as well as cognitive ability testing. Because each sample has a high percentage of students enrolled in the vocational curriculum this seemed most appropriate.

The GATB was developed by the United States Employment Service (USES) in 1947 for use in employment counseling with adults and was later extended for use at the ninth and tenth grade level. The battery takes approximately two and one quarter hours to administer and is composed of 12 subtests which yield the following aptitude scores.

G - Intelligence--General learning ability. The ability to "catch on" or understand instruction and underlying principles; the ability to reason and make judgments. Closely related to doing well in school.

V - Verbal Aptitude--The ability to understand meaning of words and to use them effectively. The ability to comprehend language, to understand relationships between words and to understand meanings of whole sentences and paragraphs.

N - Numerical Aptitude--Ability to perform arithmetic operations quickly and accurately.

S - Spatial Aptitude--Ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

P - Form Perception--Ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

Q - Clerical Perception--Ability to perceive pertinent detail in verbal and tabular material. Ability to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arthmetic computation.

K - Motor Coordination--Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and swiftly.

F - Finger Dexterity--Ability to move the fingers and manipulate small objects with the fingers, rapidly and accurately.

M - Manual Dexterity--Ability to move the hands easily and skillfully. Ability to work with the hands in placing and turning motions.

The GATB has its scores normalized to an adult population such that the mean score is 100 and the standard deviation is 20. It is normal, however, for high school students to vary slightly from these norms. Sometimes the means and almost always the standard deviations for high school students are lower than that of the adult population. The main concern in Table 1 is the comparison of means and standard deviations by curriculum. Sex becomes a factor, as the Business curriculum has a majority of females while the Vocational-Technical curriculum has a majority of males.

Differential Aptitude Tests

The Differential Aptitude Tests (DAT) were developed in 1947 to provide a standardized procedure for measuring student abilities. The intention of the DAT is to measure a number of relatively distinct abilities considered highly important in assessing the capabilities of junior and senior high school students. In 1963, the DAT was updated and restandardized on a nationwide sample of more than fifty thousand people. Voluminous data on the two new forms, Form L and Form M have been made available in the Fourth Edition Manual of the DAT, 1968. The eight tests which comprise the DAT Battery as described in the manual are:

Verbal Reasoning - This test is a measure of ability to understand concepts framed in words. The test items consist of verbal analogies which measure a combination of "verbal ability" and "deductive" reasoning. In this respect it is largely a measure of what is ordinarily conceived of as "intelligence."

Numerical Ability - This test is a measure of the student's ability to reason with numbers, to manipulate numerical relationships, and to deal intelligently with quantitative materials. Numerical ability is combined with verbal reasoning to form a VR + NA Total which may be used in place of the familiar intelligence test.

Abstract Reasoning - This test is intended as a nonverbal measure of the student's reasoning ability. The student is asked to indicate which of a series of choices properly carries out the logical development exhibited by a sequence of figures.

Clerical Speed and Accuracy - This test requires the subject to make quick comparisons of arbitrary patterns of letters and numbers; it measures the ability to scan visual materials rapidly and locate designated items. Intellectual difficulty is not involved; instead, the test objective is to measure speed of perception, momentary retention, and speed of response.

Mechanical Reasoning - In this test the subject is asked to answer simple questions based on pictures showing pulleys, balls, gears, levers, propellers, etc. The person who scores highly on this test finds it easy to learn the principles of operation and repair of complex devices.

Space Relations - This test is a measure of ability to deal with concrete materials through visualization. One type of item requires visualization of a constructed object from a picture of a pattern. This is sometimes called the "unfolded paper boxes" technique. The second item type requires the student to imagine how an object would appear if rotated in various ways.

Language Usage - I: Spelling - In this section of the Language Usage Test the student is asked to determine whether a word is spelled correctly or incorrectly.

Language Usage - II: Grammer - This section of the Language Usage Test measures the student's ability to distinguish between good and bad grammar, punctuation, and word usage.

These language usage tests are more nearly achievement tests than any other sections of the DAT. They are included in the battery because they represent skills essential in many academic and vocational pursuits.

The DAT may be used in making both administrative decisions as well as counseling individual students. While the test is equally valid at any level from eighth through twelfth grade, it may prove most useful when given just prior to making high school curriculum decisions. For most students, a decision should be reached concerning college preparation, vocational preparation, or general education. The DAT test scores can offer much useful information toward this type of decision.

The administration of the DAT battery requires approximately four hours, the testing may be broken up into from two to six separate sessions for convenience, but should be given within a one- to two-week period. Standardized

instructions are provided for increased reliability and validity. Norms are available for the DAT battery for several regions of the country, or can be given by community size. Each set of norms are based on sex and grade differences.

Numerous validity studies support the concurrent and predictive validity of the DAT battery. Literally hundreds of validty coefficients are available in the test manual. Average reliability coefficients for the tests in the battery are in the high .80's to low .90's, indicating that the battery has adequate reliability.

Occupational Values

The occupational values of students have been assessed by the Occupational Values Inventory (OVI). The OVI was developed by Impellitteri and Kapes at The Pennsylvania State University. It was first published in 1968. The OVI assesses the following seven occupational values:

a. Interest and Satisfaction - One likes the work; enjoys it; is happy at it; fulfills oneself by doing it.

b. Advancement - One perceives the opportunity to get ahead in the work; sees a good future in it; it provides an opportunity to improve oneself.

c. Salary - One perceives the financial return resulting from the work; can make a good living at it; sees it as an opportunity for a good income.

d. Prestige - One is impressed by the respectability attached to the work; can earn recognition from it; desires the feeling of importance that goes with it.

e. Personal Goal - One sees the work as fitting into his way of life; is what one always wanted to do; has been shooting for it; it's the ideal.

f. Preparation and Ability - One can succeed in the work; is good at it; it's where one's talents lie; is suited to it.

g. Security - One can obtain employment in this work; perceives that workers are needed in it; there will always be openings in it.

The unique contribution of this instrument is that it contains actual "valuing tasks" in a language easily understood by high school students. The instrument is designed such that the choice of one value precludes the choice of another, therefore while a student may score from 0 to 30 on any one value, a high score on one occupational value necessitates a low score somewhere else. The total score on all occupational values will sum to 105. If a student considered all values of equal importance he would in theory score 15 on each value.

Stanford Achievement Test

The Stanford Achievement Test (SAT) consists of a series of comprehensive achievement tests developed to measure student skills in reading, arithmetic, language, spelling, social studies, and science. The advanced battery, designed for use with seventh, eight, and ninth grade, contains the following eight tests:

Paragraph Meaning - This test provides a functional measure of the pupil's ability to comprehend connected discourse involving levels of comprehension varying from extremely simple recognition to the making of inferences from what is stated in several related sentences.

Spelling - The spelling test consists of 58 multiple-choice items in which the pupil choses from four words the one which is spelled incorrectly. This test is said to correlate highly with results of dictation-type tests. Nearly all the words used are within the first 5000 words in children's usage.

Language - The language test consists of exercises in usage, punctuation, capitalization, dictionary skills, and sentence sense.

Arithmetic Computation - This test measures proficiency in the computational skills appropriate for grades 7, 8, and 9. The computation items are drawn from the fundamental operations of addition, subtraction, multiplication, and division.

Arithmetic Concepts - This test measures the understanding of concepts such as place value, fractions, directional numbers, estimation, percentages, rounding, exponents and formulas.

Arithmetic Applications - This test measures reasoning with problems taken from life experiences. The student is required to apply his mathematical knowledge and ability to practical situations concerning volumes, ratios, graphs, percents, etc.

Social Studies - The social studies test is divided into two parts. Part A tests information on areas defined as history, geography and civics. Part B measures skill in the use of reference materials such as graphs, tables, maps and library reference.

Science - The science test measures ability to see applications of scientific principles, tests the knowledge of facts in the various branches of science, and tests knowledge of the scientific method. The areas tested include astronomy, chemistry, electricity, earth science, animals, plants, health, and conservation.

The SAT is administered in six separate sittings totaling four hours and forty-five minutes. The raw test scores can be translated by test manual norms into grade scores, grade equivalents, percentile ranks, and stanines. The test norms are based on total enrollment in regular classes at each grade level.

Test reliabilities established by the Kuder-Richardson 20 range from .76 to .94 for all subtest areas in each of the three grades, seventh, eighth and ninth making up the Advanced Battery. Content validity was established by using appropriate courses of study and textbooks as a basis for determining the skills, knowledge, and understanding to be measured.

Vocational Development Inventory

Crites (1965) has developed an instrument to measure vocational maturity called the Vocational Development Inventory. The VDI consists of 50 statements with which the person taking the inventory agrees or disagrees. The test is easily administered in a few minutes and the resulting score is interpreted through age norms to yield an index of vocational maturity.

The scores on the VDI may range from 0 to 50. Norms established for Pennsylvania ninth grade students show a mean of 34.69, a standard deviation of 4.93, and a range of 19 to 47.

Ohio Vocational Interest Survey

The Ohio Vocational Interest Survey (OVIS) is an outgrowth of the Ohio Department of Education's Vocational Planning Questionnaire. Whereas the Vocational Planning Questionnaire was used to determine school curriculum needs, the OVIS redirected its usefulness to guidance and educational planning by incorporating a theory of vocational interest. The OVIS is designed to assist eighth through twelfth grade students in making educational and vocational plans. The main consideration of the OVIS is in helping these students understand their interests and enable them to relate these experiences to the world of work. The approach used by the OVIS is to delimit interest to the vocational area and to define these interests in terms of jobs or vocations in the world of work. The OVIS contains an information questionnaire and an interest inventory. This interest inventory is based on a data-people-things approach derived from the Dictionary of Occupational Titles (DOT). The assumption is that workers in every job have some involvement with data, people, and things.

According to the DOT classification system, the domain of all jobs can be represented by 114 worker-trait groups. These 114 groups are combined on the OVIS into 24 clusters, based on a data-people-things cubistic model. This "cubistic model of vocational interest" contains three levels of involvement, for each of the data, people, things functions. Portrayed in three dimensional space a 3 X 3 X 3 matrix with 27 combinations of data-people-things can be created. Eighteen of these cells have occupations clustered in them, nine do not.

The OVIS uses 24 interest scales to survey student interest in all occupations as clustered in the eighteen cells of the cubistic model. Each interest scale samples student interest in job activities associated within a cell of the model. The three digit number in parentheses expresses the OVIS level of data-people-things involvement for the jobs which fall in that cell. The levels are 0-low, 1-average, 2-high. The 24 interest scales of the OVIS are:

1. Manual Work (001) - Unskilled use of tools and routine work usually done by hand.

2. Machine Work (002) - Operating and adjusting machines used in processing or manufacturing.

3. Personal Services (010) - Providing routing services for people as a waiter, waitress, usher, household worker, etc.

4. Caring for People or Animals (011) - Routine work related to the day-to-day needs of people or animals.

5. Clerical Work (100) - Typing, recording, filing, IBM key punching, and other clerical or stenographic work.

6. Inspecting and Testing (101) - Sorting, measuring, or checking products and materials; inspecting public facilities.

7. Crafts and Precise Operations (102) - Skilled use of tools or other equipment as in the building trades, machine installation and repair, or the operation of trains, planes, or ships.

8. Customer Services (110) - Conducting business relations with people as in retail selling, accepting reservations, receiving payments, or providing information.

9. Nursing and Related Technical Services (111) - Providing services as a nurse, physical therapist, X-ray or medical laboratory technician, or dental hygienist.

10. Skilled Personal Services (112) - Providing skilled services to people such as tailoring, cooking, barbering, or hairdressing.

11. Training (120) - Instructing people in employment or leisure-time activities. Also includes animal training.

12. Literary (200) - Writing novels, poetry, reviews, speeches or technical reports; editing, or translating.

13. Numerical (200) - Using mathematics as in accounting, finance, data processing, or statistics.

14. Appraisal (201) - Determining the efficiency of industrial plants and businesses, evaluating real estate, surveying land, or conducting chemical or other laboratory tests.

15. Agriculture (202) - Farming, forestry, landscaping, or the related fields of botany and zoology.

16. Applied Technology (202) - Application of engineering principles and scientific knowledge to the design of structures and machines.

17. Promotion and Communication (210) - Advertising, publicity, radio announcing, journalism, news information service, interviewing, recruiting; also providing legal services as a judge or lawyer.

18. Management and Supervision (210) - Administrative or supervisory positions, such as a shop foreman, supervisor, school administrator, police or fire chief, head librarian, executive, hotel manager, or union official. Includes owning or managing a store or business.

19. Artistic (212) - Interior decorating, display work, photography, commercial and creative art work, or artistic restoration.

20. Sales Representative (212) - Demonstrating and providing technical explanations of products or services to customers, selling and installing such products or services, and providing related technical assistance.

21. Music (220) - Composing, arranging, conducting, singing, or playing instruments.

22. Entertainment and Performing Arts (220) - Entertaining others by participating in dramatics, dancing, comedy routines, or acrobatics.

23. Teaching, Counseling, and Social Work (220) - Providing instruction or other services to schools, colleges, churches, clinics, or welfare agencies. Includes instruction in art, music, ballet, or athletics.

24. Medical (222) - Providing medical, surgical, or related services for the treatment of people or animals.

These 24 scales make up the interest inventory of the OVIS. In all there are 280 descriptions of actual job activities. Students respond to the statements in terms of "Like very much," "Like," "Neutral," "Dislike," and "Dislike very much." The scale scores obtained may be converted to percentile ranks or stanines for comparison with local and national norms. The raw scores range from a low of 11 to a high of 55.

It has been suggested that the OVIS provides the school counselor with a convenient starting point for introducing career orientation and exploration to students and their parents, especially when used in combination with information about student ability, aptitudes, achievement, and other personal characteristics. OVIS scores are compared to student curriculum enrollment in Table 8.

Metropolitan Achievement Test

The Metropolitan Achievement Test (MAT) is a source of information specifically about what pupils have learned in school. As a standardized achievement test it provides comparable evaluation in different subject areas. The areas tested are: Word Knowledge, Reading, Spelling, Language Study Skills, Arithmetic Computation, and Arithmetic Solving and Concepts. The raw scores obtained from the MAT tests may be converted to standard scores, grade equivalents, percentiles, or stanines through test manual conversion tables.

It is generally recommended that the test battery be given in six separate sittings, though two sittings may be given in one day. The total testing time required is 4-1/2 hours.

The score means and standard deviations reported in Table 4 are given in grade equivalents. The MAT was administered to the Williamsport sample in November, 1969. This administration date is equivalent to a grade placement of 8.3.

Attendance

The student's attendance record has been recorded for seventh, eighth, and ninth grades. No distinction was made between legal absenses and truencies, nor are tardies recorded.

Occupational Interest Inventory

The purpose of the Occupational Interest Inventory (OII) is to measure the occupational and vocational preferences of students. The OII is intended to aid in identifying the broad field or fields of interest which appeal to the individual, the type of interest within a field, and the level of preference. The six fields of interest are:

Personal-Social - A high score in this field generally indicates a real liking for people and, usually, a desire to do things for people; such an interest is typical of the many personal service occupations, teaching, the ministry, and law.

Natural - High scores in this field indicate a liking for the out-of-doors, for plants and animals, for the protection of natural resources; these apply to agriculture, landscaping, animal husbandry, and forest service careers.

Mechanical - People who are interested in machines and tools score high in this field. They like taking things apart and putting them back together; such interests are typical of mechanics, machinists, many craftsmen, dentists, and engineers.

Business - Interests in all activities peculiar to the business world are grouped in this field; these cover accountants, bankers, clerical workers, stenographers, and sales personnel.

The Arts - High scores in this field indicate interests in music, drama, literature, and art. These are the esthetic interests and are typical of actors, writers, composers, commercial artists, and those engaged in advertising.

The Sciences - Persons interested in research, invention, the explanation of natural phenomena, etc., earn high scores in this field; such interests are typical of engineers, physicists, chemists, and most types of laboratory workers.

Three types of interests are identified by the OII. Types of interests focus the field or fields of interest on certain types of occupations. The three types are:

Verbal - A high score here indicates that one likes to communicate, to use words either in writing or in speaking. The words may be used to help people, to describe a thing of beauty, to convince others to accept an idea, or to make a sale. Salesmen, lawyers, writers, and teachers score high on this type.

Manipulative - People who like to work with their hands, whether routinely or creatively, score high on this scale. Craftsmen, assemblers, and technicians usually score high on this type.

Computational - A high score on this scale indicates a preference for working with numbers and mathematical symbols and concepts. Cashiers, bookkeepers, accountants, and bankers usually score high on this type.

The level of preference identified by the OII was not available as part of the Williamsport data. However, the fields and types of interest were available, and the student means and standard deviations for these measures are displayed by curriculum category in Table 7. These scores are based on students' percentile ranks.

The inventory asks the student to identify which kind of work he would rather do, by choosing one of two or three alternatives given. The test takes approximately 30 to 40 minutes to administer and the 150 answers may be hand or machine scored. The raw scores may be converted to percentiles or standard scores. Through the use of profiles, these scores make possible the analysis of interest patterns.

California Test of Mental Maturity

The California Test of Mental Maturity (CTMM) consists of twelve test units representing different mental exercises or abilities. The CTMM has been standardized to provide comprehensive measurement of the functional capacities that are basic to learning, problem-solving, and responding to

new situations. These abilities are commonly attributed to "intelligence." The battery of twelve tests contains 230 items; 140 in the Non-Language Section and 90 in the Language Section.

The twelve test units are grouped according to five factors, as described below. All items are of the multiple-choice type, and are arranged in ascending order of difficulty in each unit.

Logical Reasoning - In each of the first three tests, a stated premise is projected into a series of picture problems with a choice of responses. The examinee must apply inductive or deductive reasoning to perceive the logical response or relationship called for by the items in each test.

Spatial Relationships - The two tests within this factor involve the accuracy and flexibility of the student's visual perceptiveness. The items evaluate the ability to orient visually-presented forms without reference to context and to manipulate mentally two- and three-dimensional patterns in space. An important element of these skills is the recognition of different projections of a design and of the significant details that distinguish one pattern from another.

Numerical Reasoning - This factor involves reasoning in quantitative relationships, rather than the knowledge of arithmetic fundamentals. It emphasizes the comprehension of numerical concepts and the application of mathematical principles to problem-solving.

Verbal Concepts - General proficiency in relating words to meanings is measured in the two units of this factor. Both tests involve the comprehension and translation of verbal concepts: One concentrates on the level of vocabulary, the understanding of the literal meaning of words; while the other test primarily involves the ability to analyze a verbal communication logically.

Memory - Two forms of retentive ability are tested in the two units composing this factor. One stresses associative recall; its intent is to measure retention rather than comprehension of the orally-presented stimuli. The other component of the factor involves the ability to recall accurately, after a longer measured time interval, the factual information details and overall content of a story. This involves the understanding of meanings and actions presented in the story.

The CTMM requires about 2 hours to administer. The test may be hand or machine scored. The five factors can then be profiled for interpretation. An alternative way of examining a student's scores is by regrouping the 12 test units to form two intelligence quotients, Language and Non-Language. Table 8 depicts Language I.Q., Non-Language I.Q. and a total I.Q. Total I.Q. is a weighted average of the other two measures. The CTMM I.Q. measure has a normative mean of 100 and a standard deviation of 16.

Biographical Information

Several pieces of information have been classified under the broad heading of biographical information. This material is largely family background information collected through a questionnaire administered to the students during the ninth grade.

Father's Education--Father's education was recorded according to categories. Categories represent the number of years of education attained. (e.g. 1 = 1 year, 2 = 2 years, etc.) One category represents all levels of education beyond sixteen years, while an additional category has been designated for those who provided no information of father's level of education.

Father's Occupation--The student listed his father's occupation which was collected and then recorded using the Field and Level Classification of Anne Roe (1956). Each occupation was assigned to one of eight field categories: (1) Service, (2) Business Contact, (3) Organization, (4) Technology, (5) Outdoor, (6) Science, (7) General Culture, and (8) Arts and Entertainment.

Each occupation was also assigned a level classification: (1) Professional and Managerial II, (3) Semi-professional and Small Business, (4) Skilled, (5) Semi-skilled, and (6) Unskilled.

Mother's Education--Mother's education was recorded using the same categories as father's education.

Mother's Occupation--Mother's occupation was recorded by the Roe Classification system in the same manner as was father's occupation with the addition of a Housewife category.

Sex--The sex of each student in the sample has been recorded since this variable has been shown to have a bearing on several research topics.

Income--The total family income was obtained if the student volunteered this information. Over half of the sample either did not know or preferred not to answer this question. The information was collected by broad categories, assuming that ninth grade students were unlikely to have precise information of parental income.

Birth Order--From the number and position of siblings the birth order of the students could be determined and recorded. Many psychologists and sociologists attribute considerable significance to birth order and family size as factors affecting child development.

Number of Children--The size of each student's family can be determined by the data collected in regard to siblings. Each student was asked to record the number of older brothers, older sisters, younger brothers and younger sisters in his family.

Hobbies and Interests

Students were asked to list the hobbies and extracurricular activities in which they were involved. They were encouraged to list all kinds of activities whether organized or not. The 24 most commonly listed activities were selected as categories and each student was recorded as participating or not participating in that activity.

Educational Plans

Students were asked two questions about their plans to continue education after high school. One question asked, ideally, what type of educational institution would you like to attend following completion of high school. The second question asked, realistically, what type of educational institution do you expect to attend following high school. Answers to both questions were placed in the following categories: (1) No further training, (2) Non-degree vocational education, (3) Two-year associate degree, (4) Four-year college, and (5) Four-year college and graduate work. Tables 20 and 21 exhibit the responses obtained by each curriculum grouping.

Occupational Plans

Each student was asked to relate his realistic occupational aspirations. The student was asked to "print the occupation which you feel you will most probably enter." This response was coded according to Roe's (1956) Field and Level Classification system. The categories recorded are: Field - (1) Service, (2) Business, (3) Organization, (4) Technology, (5) Outdoor,

(6) Science, (7) General Culture, (8) Arts and Entertainment, and (9) Housewife. Level - (1) Professional and Managerial I, (2) Professional and Managerial II, (3) Semi-professional and Small Business, (4) Skilled, (5) Semi-skilled, (6) Unskilled, and (7) Housewife.

School Generated Data

As a result of the student's interaction with the school system much useful data is generated which is descriptive of the student's normal progression through the system. This data is necessary in order to take into account each student's unique experiences as well as for the purpose of specific studies involving various aspects of the school program. For this reason the following school data was obtained from the school files: attendance records, course grades, achievement test scores, health status and personal traits. Satisfaction information was also gathered from the student himself through the use of a satisfaction index designed for that purpose.

School Grades--Grades for all major subjects have been collected, English, language, mathematics, science, shop and social studies. These have been collected from the school record files for seventh through twelfth grades.

Grades Repeated--A piece of information collected and recorded was the "grade repeated" by each student. This information was recorded by category. The categories were: no grades repeated, grade one, two, or three repeated; grade four, five, or six repeated; grade seven, eight, or nine repeated; more than one grade repeated.

Number of Grades Repeated--Each student was asked to relate the number of school grades he repeated.

Attendance--The students attendance record has been recorded for seventh, eighth, and ninth grades. No distinction was made between legal absenses and truencies, nor are tardies recorded. Attendance may be useful in relating certain in-school or out-of-school variables.

Other Specialized Instrumentation

In addition to the standardized tests and inventories used to collect data, several specialized instruments were developed for this specific study. These were essential in collecting family and environmental background information, occupational and educational aspirations, and school generated data. Several of these instruments are described below. Examples of each may be found in Appendix A.

Grade Card--A 5 x 8 inch index card was printed on one side to provide for the student's name, identification number and achievement scores. On the reverse side space was provided for school grades, attendance and personal traits. These cards were used to collect the original data, and then filed numerically to form a permanent back-up record of the data after it had been recorded on computer tape.

Ninth Grade Choice Card--The choice card was developed to record the student's occupational choice, high school course of study, post high school educational plans, post high school educational emphasis, and student hobbies.

Each item, except for the hobbies listed, was recorded with an idealistic and a realistic answer. In many cases, these answers were the same while in others, because of the student's personal perspective, they differed.

Tenth Grade Choice Card--The tenth grade choice card, also called the personal preference card, contains the same type of information as the ninth grade card. When responses from these cards are compared, changes in student maturity, interest, and expectations can be evaluated.

Twelfth Grade Questionnaire--The Altoona Twelfth Grade Questionnaire is a comprehensive six page instrument. It was designed to answer several questions. Part I contains information used to locate the student for subsequent post-high school follow-ups. This information includes home address, social security number, college or school to be attended, as well as the address of other people who will know the location of the student. Part II elicites information about the student's current view of his high school experience and his expectations for the first year out of high school. The twelfth grade questionnaire used for the Hazleton and Williamsport samples is a revised version of that used for Altoona. A four page booklet format was used in conjunction with a standard answer sheet so that a majority of the students' responses could be electronically scanned and automatically processed.

Birthday Card--A birthday card was chosen as an appropriate format to use in maintaining contact with the students after they had graduated from high school. In addition to showing the Vocational Development Study project's interest in each individual, the birthday card presented the opportunity to include a card requesting updated address information.

One Year Follow-up Questionnaire--A one year follow-up questionnaire was designed for use with the Altoona sample. The questionnaire was redesigned for the Hazleton and Williamsport samples to allow for different input from each school system into the follow-up process. Each of the three school systems was given the opportunity to provide some of their own questions on the questionnaire, thus allowing direct student feedback that they might otherwise not have.

The questionnaires consisted of four parts. All persons were asked to answer Part A, while questions in Parts B, C and D were directed specifically to those presently in school, employed, or unemployed and not in school. The procedure and results of the Altoona follow-up are presented in this report, Chapter III, Section B4.

Data Handling and Storage

Data Coding

One of the most time consuming jobs in the handling of data after its initial collection is coding. Coding is necessary for many of the variables collected so that the information can be segmented into major categories. One example of coding would be the classification of salary into district categories. On the one year follow-up, the graduates of Altoona were asked to list their weekly salary. Rather than working with values which could run from a very few dollars to several hundred dollars per week, it is convenient to categorize salaries using five to ten divisions which logically fit the data.

Another example of the necessity of coding data is reflected in the classification of occupations. A most important, and re-occurring question throughout this study is: What occupation do you intend to enter when your schooling is completed? The most complete index of occupations in America is recorded in the Dictionary of Occupational Titles (DOT), published by the United States Employment Service. The most recent edition, 1965, of the DOT lists 21,741 separate occupations with 35,550 different titles. Because of this wide range in possible occupations, it becomes essential to use a classification system to make the data useable. In the case of occupations, Anne Roe's classification system of field and level was selected for coding. This system classified all occupations into eight fields and six levels or forty-eight separate categories, a reasonable and manageable number. Previous research with the Roe classification system has shown it to be a viable manner in which to view occupations.

Methods of coding must be selected so that the data is simplified and yet retains the original information. The coding process then, becomes more than merely a time-consuming necessity, it is essential in maintaining the validity of the data collected.

Editing

An important step in the handling of data is the editing of information. Some data will always be collected that for various reasons is inaccurate. Students will sometimes misinterpret the directions or fail

to completely fill-out the test instruments. Occasionally students will write facious answers, which on inspection can be eliminated from the data. For whatever reasons, these invalid responses need to be eliminated from the data to insure the validity of the data. This is done by visually editing the information collected from the students. This necessary, but time consuming step, can often be combined with the operation of transferring information to coding sheets. The people who perform this task are instructed in the necessity for accurate information. The same person begins, follows through and completes each coding task and editing step so that maximum reliability is maintained.

Another editing phase can be used to insure the accuracy of the data on tape. In this case, rather than manual inspection as indicated above, a computer program is used to identify any illegally punched data. This has been done by creating computer programs using the Fortran IV language. Each program developed for editing purposes checks the values on the computer tape to assure that they are legitimate values.

For example, when the demographic data of Father's Education was placed on the Altoona tape in column 138, there were eight legitimate codes tested for by the editing program. The legal codes were:

1 = 1 to 5 years education

2 = 6 to 8 years education

3 = 9 to 11 years education

4 = high school graduate

5 = 13 to 15 years education

6 = college graduate

7 = more than 16 years

9 = not answered

Any other code, 8, 0, $, B, Q, ?, etc., would be noted on a print-out and the proper correction would be made.

These editing procedures are an important part of the data handling procedure. While admittedly time consuming, they are essential in maintaining the reliability and validity of the original collection instruments.

Data Storage

All data following collection and coding must be stored for later analysis. Firgure 2 shows the progression of data from its initial collection to its permanent storage on computer tape. The selection of computer tape storage was on the basis of compactness, low cost and easy access and manipulation of data. As Figure 2 shows, data is transformed from IBM punched card format to magnetic tape. This process is easily reversible and as a consequence, card decks can be generated from tape with any selection of information desired punched on the new deck. Because of this facility, most all project analyses have been computed by using decks of information derived from the tape. This allows several investigators to work independently and concurrently without hindering each other's progress. More importantly the magnetic tape is protected from possible investigator error which could destroy or change the information on tape.

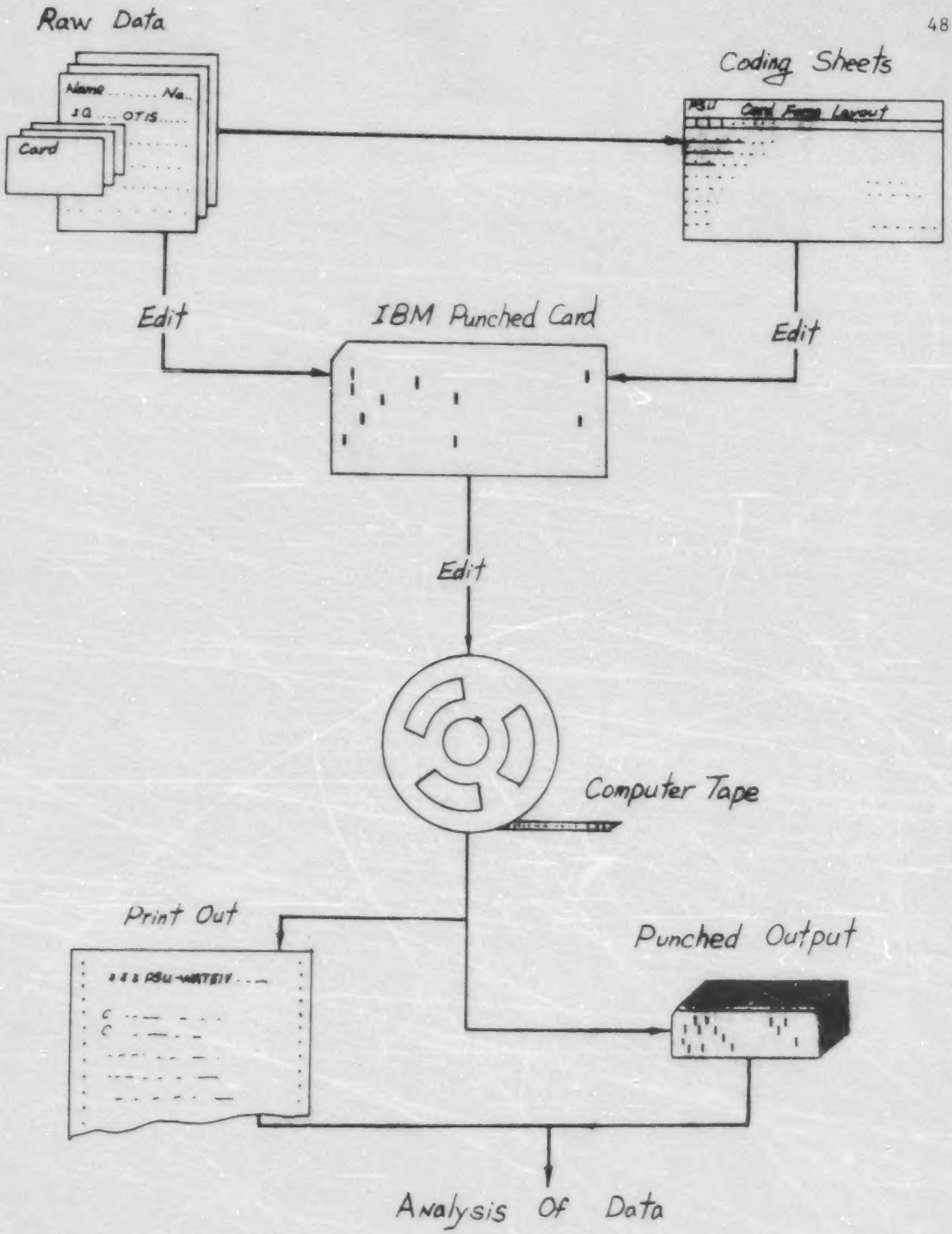


Figure 2 : Data Collection Flow Diagram

Because such an enormous amount of irreplaceable information is recorded on these tapes at great expense of time and money, the value of the data on tape becomes astronomical. For this reason, every attempt has been made to safeguard against the loss of data. This has been accomplished by the limiting of direct work with the tapes by any one other than thoroughly trained project staff. Also, up-to-date duplicate tapes are maintained as back-up should an equipment or operator failure damage the original tape. In addition, the punched card decks used to place data on tape, have been retained as a further precaution.

Data Tape Layout

The use of computer tape to store data provide convenient and compact storage of data. However, an accurate reference is necessary to enable the researcher to interpret that data. This reference has been termed the Data Tape Layout. The Data Tape Layout for the Vocational Development Study consists of five sections. Section I, the Key Word Index, provides the user with the location of data on tape by means of prime or key word descriptors. Each descriptor is followed by the column location of that piece of data. Also listed is an "A," "H," or "W" which indicates the project sample(s) for which data is present, Altoona, Hazleton, and/or Williamsport.

Section II, III and IV refer respectively to Altoona, Hazleton, and Williamsport. These sections describe the data column by column from column 1 through the last column on each tape. The data contained in each column is named and the codes used are described.

Section V, the Glossary, may be referred to for additional information. In this section are definitions of terms and information concerning test forms, instruments, and other data collecting devices. See Appendix B for actual Tape Layout.

III

RESEARCH STUDIES CONDUCTED AND DISSEMINATION

Introduction

The largest contribution to the field of educational research, and, in particular, research concerned with the vocational development process made available through the three phases of this research project, is contained in the twenty published monographs. Copies of all twenty monographs have been forwarded to the Research Coordinating Unit (RCU) and to selected members of the enclosed dissemination list, thus they will not be included with this final report. Although the RCU received numerous copies of each monograph, not all members of the dissemination list received all copies of the monograph series. They did, however, receive copies of all monographs which the Vocational Development Study (VDS) staff felt would be of interest to each individual on the list.

Copies of the VDS Capsule from each report, beginning with report Number Two, is included so that the reader might be able to review each report in an attempt to provide the reader with a succient review of the findings of each report. Monograph Number One is a description of the research program and was written in capsule form; therefore, its capsule does not appear in this section.

In addition, a list of all twenty monographs is included in this report so that the reader may examine this series and be better able to understand the scope of this research effort. Limited copies of

monographs of this series are available upon request from the Department of Vocational Education at The Pennsylvania State University, VEIN, and the ERIC Clearinghouse.

Along with the monographs, this section also contains all papers presented at conventions (Appendix C), a list of all published articles, and other related written material such as Masters Papers resulting from a natural spin-off of the effect of this research effort within the Department of Vocational Education.

Since good community relations is an important ingredient toward the success of any public program, an attempt was made to promote favorable community understanding about this project. Examples of newspaper items are presented in this section as evidence of the outcome of this effort.

This project ended at a time when the Altoona class graduated and had been employed for one year. Therefore, it was possible to conduct a one-year after graduation follow-up survey of this class. A complete questionnaire packet used with this survey is included in this report along with a descriptive report of all return data from this survey (Appendix D).

It is the intent of this section to report all written information concerned directly or indirectly with this research effort. It is through this written information that the reader is provided with the conceptual scope of this project and the results of this effort.

Vocational Development Study Series

Impellitteri, Joseph T. and Kapes, Jerome T. A Longitudinal Study of Vocational Development: Implications for Vocational Education and Guidance. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 1, July, 1971, (42 pp.).

Kapes, Jerome T. The Relationship Between Selected Characteristics of Ninth Grade Boys and Curriculum Selection and Success in Tenth Grade. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 2, August, 1971, (141 pp.).

Impellitteri, Joseph T. and Kapes, Jerome T. The Measurement of Occupational Values. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 3, September, 1971, (64 pp.).

Enderlein, Thomas E. An Examination of the Relationship of Selected Student Variables to Vocational-Technical Shop Achievement. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 4, February, 1972, (70 pp.).

Kapes, Jerome T. and Lotowycz, Leo W. Changes in the Occupational Values of Students Between Ninth and Tenth Grade as Related to Course of Study and Other Student Characteristics. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 5, April, 1972, (48 pp.).

O'Reilly, Patrick A. Evaluation of In-School Success Criteria for Vocational-Technical Students. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 6, May, 1972, (71 pp.).

Brantner, Seymour T. and Enderlein, Thomas E. A Comparison of Vocational and Non-Vocational High School Dropouts and Retainers. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 7, June, 1972, (69 pp.).

Martin, Randall B. Relationships Between Holland's Vocational Preference Inventory and Vocational-Technical Student Achievement. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 8, October, 1972, (64 pp.).

McAlister, Bernard M. Curriculum Selection and Success of Tenth Grade Girls as Related to Selected Ninth Grade Characteristics. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 9, March, 1973, (101 pp.).

Hill, Theodore A., Kapes, Jerome T., Martin, Randall B. The Ninth Grade Characteristics of Students Entering Different Tenth Grade Curricula: VDS Altoona Sample. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 10, April, 1973, (115 pp.).

Kapes, Jerome T., Hill, Theodore A., Martin, Randall B. The Ninth Grade Characteristics of Students Entering Different Tenth Grade Curricula: VDS Hazleton Sample. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 11, April, 1973, (178 pp.).

Martin, Randall B., Hill, Theodore A., Kapes, Jerome T. The Ninth Grade Characteristics of Students Entering Different Tenth Grade Curricula: VDS Williamsport Sample. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 12, April, 1973, (138 pp).

O'Reilly, Patrick A. Predicting the Stability of Expressed Occupational Choices of Secondary Students. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 13, May, 1973, (168 pp.).

Strickler, Robert E. Change in Selected Characteristics of Students Between Ninth and Twelfth Grade as Related to High School Curriculum. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 14, June, 1973, (90 pp.).

Brown, Richard H., Kapes, Jerome T. A Longitudinal Study of the Level of Occupational Aspirations of Youth Over the High School Years. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 15, October, 1973, (57 pp.).

Schowalter, Lynn M. The Relationship of High School Curriculum and Other In-School Characteristics to Employment Success One Year After Graduation. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 16, March, 1974, (64 pp.).

Kapes, Jerome T., Pawlowski, Vladimir. Characteristics of Vocational-Technical Instructors and Their Relationship to Student Shop Achievement. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 17, April, 1974, (57 pp.).

McQuay, Paul L. Shop Achievement As An Outcome of One Year Versus Two Years of AVTS Instruction. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 18, May, 1974, (53 pp.).

Kapes, Jerome T., Rollins, Robert D. The Ninth Grade Characteristics of Students Enrolled in Selected AVTS Programs in Twelfth Grade. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 19, June, 1974, (95 pp.).

Enderlein, Thomas E. Causal Relationships of Student Characteristics Related to Satisfaction in Post High School Employment. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 20, July, 1974, (145 pp.).

This paper has been written for the Altoona school system counselors in order to provide a focus for the discussion of some findings of the VDS study being conducted in Altoona. The findings reported in this paper have been abstracted from VDS monograph number two entitled "The Relationship Between Selected Characteristics of Ninth Grade Boys and Curriculum Selection and Success in Tenth Grade". Several specific findings will be described first with a section on possible implications following the findings section.

Findings

1. Other characteristics being equal the more value the boys placed on prestige as measured by the OVI, the more likely they were to be enrolled in the academic curriculum at the end of tenth grade as opposed to the vocational curriculum. For those boys who were enrolled in the vocational curriculum, the less value they placed on prestige, the more likely they were to be successful students as measured by GPA.

2. Cognitive ability as measured by GATB V and/or N is related to both curriculum selection and success. As would be expected, those male students with relatively more cognitive ability tended to choose the academic curriculum over the vocational curriculum. Within each curriculum, cognitive ability is also related to success as measured by GPA, but is less predictive of success in the vocational curriculum.

3. Those male students whose socioeconomic status is relatively low as measured by their father's educational and occupational level and their level of occupational aspiration tended to select the vocational curriculum over the academic curriculum, other characteristics being equal. Also, for those students who were enrolled in the academic curriculum at the end of tenth grade, those who were less successful as measured by GPA tended to have relatively lower socioeconomic status. This latter finding did not hold true for the vocational curriculum.

4. Other characteristics being equal, those academic male students who were more vocationally mature were also relatively more successful as measured by GPA at the end of tenth grade. Under the same circumstances, however, vocational maturity is not related to success in the vocational curriculum. Vocational maturity "...refers to the maturity of an individual's vocational behavior as indicated by the similarity between his behavior and that of the oldest individuals in his vocational life stage" (Crites, 1961).

Possible Implications

1. By lowering their prestige values, unsuccessful academic male students may choose the vocational curriculum and become potentially successful vocational students.

2. By increasing the prestige of the vocational program, more students may choose and be successful in the vocational program.

3. While verbal and numerical ability is related to success in

both the vocational and academic curriculums, a lesser amount of that aulity is necessary for success in many of the vocational programs. This finding could reflect a conscious effort in this direction on the part of those involved in vocational education.

4. Since success in the vocational curriculum is less related to verbal and numerical ability than in the academic curriculum, other factors not identified by this study apparently play a bigger role in determining success in the vocational curriculum.

5. Since lower socioeconomic status is related to success in the academic curriculum, but not in the vocational curriculum, it is possible that these students feel less motivated by the academic curriculum than by the vocational curriculum.

6. It is possible that the reason lower socioeconomic male students are less successful in the academic curriculum than in the vocational curriculum may be due to the existence of a form of discrimination in the former, but not the latter curriculum.

7. A lack of vocational maturity appears to be more costly to those male students who are unsuccessful in the academic curriculum. An increase in vocational maturity could facilitate unsuccessful academic students choosing and being successful in the vocational curriculum.

8. A broad based and flexible vocational curriculum could provide those unsuccessful academic male students with an opportunity to explore the vocational world further and provide meaning to their educational endeavor until which time they become vocationally

mature enough to make a commitment.

9. While it is apparent that male students with a high level of ability and socioeconomic background are likely to be successful in either curriculum, additional information is useful in predicting the success of students with a moderate or lesser amount of such characteristics. For this latter group, those who have chosen the vocational curriculum, those who place relatively little value on prestige, and those who possess a high degree of vocational maturity appear to have the greatest chance of success in school as measured by GPA.

VDS CAPSULE MONOGRAPH NUMBER 3

It is the intent of this VDS Capsule to provide teachers, counselors, administrators, and others concerned with the vocational development process with relatively brief and practical interpretations of the major aspects of this report. Since this monograph is not a study which has set out to answer a particular question, but rather a technical manual describing the development and validation of the occupational values inventory (OVI), this capsule will not deal with specific findings and implications. Rather, this capsule will serve as a summary of the development of the OVI concerning such things as the rationale utilized in its development, procedures followed, and reliability in validity data gathered. The information contained in this summary should provide the reader with a brief insight into the larger document.

Rationale for the OVI

Upon reviewing eight available occupational values inventories it was concluded that an adequate work values instrument utilizing an ipsative framework and written at a seventh grade reading level was necessary, but was not currently available. An ipsative framework was felt to be necessary because values were viewed as essentially ipsative in nature. That is, valuing is to chose among alternatives. The critical factor is whether John values X more than Y, rather than whether John values X more than Fred does. It naturally follows, then, that the most appropriate measure of values would be one made up of a set of forced choice items. The task required of an individual would in this way be representative of the valuing process.

Construction of the OVI

From the review of the eight available work values inventories it was discovered that 22 different values had been identified. When the values were ranked according to their frequency of occurrence in other instruments and when relevance for adolescence was considered, seven of these values were selected for inclusion in the OVI. These seven values along with some brief examples are as follows:

1. Interest and Satisfaction--One likes the work; enjoys it; is happy at it; fulfills oneself by doing it.

2. Advancement--One perceives the opportunity to get ahead in the work; sees a good future in it; it provides an opportunity to improve oneself.

3. Salary--One perceives the financial return resulting from the work; can make a good living at it; sees it as an opportunity for a satisfactory income.

4. Prestige--One is impressed by the respectability attached to the work; can earn recognition from it; desires the feeling of importance that goes with it.

5. Personal Goal--One sees the work as fitting into his way of life; is what one always wanted to do; has been shooting for it; it's the ideal.

6. Preparation and Ability--One can succeed in the work; is good at it; it's where one's talents lie; is suited to it.

7. Security--One can obtain employment in this work; perceives that workers are needed in it; there will always be openings in it.

Fifteen separate statements were selected to represent each of the seven values and thus the OVI consist of 105 separate value statements. These statements have been grouped in forced choice triads so as to require one being selected as most important, one being selected as least important, and one remaining unselected. Thirty-five triads allow each value to appear

in the company of each of the other values a total of five times. Since there are six other values in each case, a total of 30 comparisons are provided for each value. Therefore, the highest possible score on any one value is equal to 30. Since the OVI is an ipsative instrument the total of all scores for all seven scales must sum to a constant. This constant is equal to 105 which is the total number of items.

OVI Reliability Studies

In most cases internal consistency reliabilities utilizing the analysis of variance method were calculated when reliability studies were conducted. Utilizing a sample of over 1,000 boys and girls in ninth grade in Altoona Pennsylvania, median reliabilities were equal to .78 for boys and .76 for girls. The overall range extended from a high of .89 to a low of .72. Utilizing the same sample of boys and girls one year later in tenth grade, median reliabilities of .84 and .83 were obtained. A similar, but smaller, sample of boys and girls from the state of Utah yielded median reliabilities of .82 and .84 respectively. Test-retest stability coefficients over a nine week period for a sample of ninth graders yielded a median correlation of .60. Median stability coefficients over a 13 month period ranging from ninth to tenth grade were in the low 40's.

OVI Validity Studies

In a study designed to explore the concurrent validity of the OVI scales, each scale was correlated with the variables Sex, GATB--General Aptitude Score, College Aspiration, and choice of a vocational course of study in senior high school, for a sample of ninth grade boys and girls. The results of the study

indicated that at least five of the seven values scales were significantly related to sex, general intelligence, and choice of a vocational versus a nonvocational curriculum. College aspiration was related to three of the OVI values. Only the value Preparation and Ability was not related to any of the four variables under investigation. The value scales Interest and Satisfaction, Salary, and Personal Goal yielded the highest relationships. Separate norms for male and female ninth graders were calculated and the value Salary exhibited the greatest discrepancy while the value Security exhibited the least discrepancy between the two sexes.

Although the reliability and validity information provided at this time is indeed sketchy, the report details many additional studies which are anticipated using the OVI. When these studies have been completed much additional reliability and validity data will be available.

It is intended that this section of the report provide teachers, counselors, administrators, and other school personnel with relatively practical interpretations of the major findings and implications of this study. Considering the focus of this investigation this capsule statement has been written primarily for ninth grade counselors and school personnel involved in vocational programs. A brief description of the major findings is followed by a listing of some of the possible implications which may be drawn from these findings.

Findings

1. Of the eight General Aptitude Test Battery (GATB) aptitudes used as independent variables, the aptitudes Verbal, Numerical and Spatial were the most predictive of achievement in eleventh and twelfth grade vocational technical programs as measured by the Ohio Trade and Industrial Education Achievement Tests (OTAT).

2. The eight GATB aptitudes taken together did not predict shop achievement as measured by end-of-year shop grades in eleventh and twelfth grade vocational-technical programs.

3. Using an interest variable as a predictor (comparing those who received their first choice of a vocational-technical program to those who did not) in addition to the GATB aptitudes did not increase the predictability of either OTAT scores or end-of-year shop grades. Those students who received their first choice did no better than those who received their second, third or fourth choice.

1. Since the OTAT total scores were best predicted by the cognitive portion of the GATB, perhaps the manipulative portion of the GATB is unnecessary for use as a counseling tool.

   a. While the OTAT measures content knowledge perhaps grades, although not predictable, may be related to the manipulative portion of the GATB.

   b. By using the Occupational Aptitude Patterns (OAP's) for individual selection into the trade areas, it should be noted that those students selected probably did possess a minimum amount of necessary manipulative aptitudes. This selection process may have limited the aptitudes' effect upon prediction.

2. Since the OTAT, a predominately knowledge oriented measure was best predicted by cognitive aptitudes and grades were not predictable by any of the GATB aptitudes, it is possible that the grading system used in these vocational programs de-emphasized cognitive skills.

   a. The lack of predictability of end-of-course grades may indicate that each instructor may have developed a variety of different criteria to use in assigning grades.

   b. Although end-of-course grades do not appear to be related to interest or ability as measured in this study, they may be related to other variables not included in this study.

3. The lack of relationship of the interest variable to achievement as measured in this study may indicate that individual interest in a particular program does not affect achievement.

a. Perhaps the lack of predictiveness of the interest variable may be due to the restricted nature of the sample. The dispersion of the sample, (59 received their first choice and 11 did not) may have affected the analysis.

b. It is possible that only those that received their first choice and those that received their second, third or fourth choice and were satisfied were the only students that remained in the vocational program and thus those who were actually uninterested in their program have long since left the vocational school.

It is hoped that this short abstract of findings and implications will be helpful to those who would like a quick overview of the major aspects of this study.

Findings

1. The Interest and Satisfaction, Salary, Personal Goal and Security values possessed the highest degree of relationship with the student characteristics used in this study and appear to be related to curriculum choice.

2. The values of Advancement, and Preparation and Ability possessed the smallest relationships with the student characteristics used in this study.

3. For the most part, the relationship between the OVI values and the student characteristics were similar for both ninth and tenth grade analyses. The degree of relationship tended to decrease over the one year period.

4. Using all student characteristics taken together, the largest amount of explained variance for any one value (Interest and Satisfaction) was equal to 17 percent.

5. The relationship between ninth and tenth grade values was fairly low (r between .38 and .48).

6. Change in values using change scores was not found to be related to any of the student characteristics used in the study.

7. Interaction between Curriculum and Sex was found to exist for the values of Interest and Satisfaction, Prestige and Security.

Implications

1. The values of Interest and Satisfaction, Salary, Personal Goal and Security appear to be very significant values during the ninth to tenth grade period and appear to have an impact upon curriculum choice.

2. The values of Advancement, and Preparation and Ability are either unrelated to the student characteristics used in the study or are poorly measured by the OVI.

3. The relationship between student characteristics and values appears to be fairly stable between ninth and tenth grade.

4. Occupational values are difficult to predict or are not adequately measured by the OVI.

5. An ipsative instrument such as the OVI possibly is not appropriate in assessing change for an entire value structure.

6. The use of change scores is not an appropriate means to assess change in values on an individual basis.

7. The effect which curriculum has upon the occupaitonal values of ninth and tenth grade students does apparently differ with respect to Sex of the students for such values as Interest and Satisfaction, Prestige and Security.

VDS CAPSULE MONOGRAPH NUMBER 6

This section is intended to provide a brief but thorough summary of this study which will be of practical value to teachers, counselors, administrators, and other school personnel. It is hoped that ninth grade counselors and those persons associated with vocational programs will find it to contain practical and useful information. In light of the objectives of this section, the following discussion will be as brief as possible.

Findings

1. This study attempted to predict in-school success criteria using sixteen student characteristics. Of the five criteria of success investigated in the study, GPA (11th Grade) was found to be most predictable and OTAT was found to be least predictable. The other success criteria in terms of predictability were: Shop Grade (11th Grade) second, GPA (10th Grade) third, and Shop Grade (10th Grade) fourth.
2. Excepting Shop Grade (10th Grade), all of the various success measures were found to be related. However, this relationship gets weaker as the time span between the measures increases.
3. Ninth grade student characteristics become more predictive with time. That is, they predict GPA (11th Grade) better than GPA (10th Grade).
4. Verbal aptitude, numerical aptitude, vocational maturity and value of salary seem to be the most useful of the student characteristics used in predicting all five measures of success.

3. Shop Grade (10th Grade) is the only success measure in which manipulative abilities are important predictors.

Implications

1. Verbal and numerical aptitudes play an important role in achievement within the vocational curriculum. It should be remembered, however, that they are not so important as to exclude other variables such as attitudes and values. The results of this study merely serve to re-emphasize that the student who is below average in terms of communications and computation skills will have difficulty in achieving no matter what curriculum he is enrolled in.
2. Because of the relationship among the success criteria, a student who is successful in terms of specific shop experience is likely to be successful in the overall educational system. However, a specific type of success is still best measured in terms of a given criteria. For example, GPA best measures success in the overall educational system while shop grade best measures success in a specific vocational course. This is, of course, what would have been expected.
3. Maniuplative abilities seem to be important in determining success in tenth grade shop. In eleventh grade, these abilities are less important. This may indicate that by the eleventh year, students have become more uniform in terms of manipulative ability. As the student progresses to the eleventh year shop, cognitive skills, attitudes,

and values seem to become more important in determining student achievement.

4. Vocational maturity and value of salary are quite important in determing success in the overall educational program. That is, the student who sees the relationship between all of his educational endeavors and his occupational goals, and who is capable of delaying gratification in terms of salary will more likely achieve better in terms of both GPA and Shop Grades. This finding offers a very real challenge for educators to show vocational students the relationship and value of all of their educational experiences to the attainment of future occupational gratifications.

VDS CAPSULE MONOGRAPH NUMBER 7

A succinct review is presented here to provide, teachers, counselors and administrators as well as other school personnel with practical interpretations of this study. What is provided in this section is an attempt by the authors to point out the major implication of the report to this problem of national scope. The findings are followed by the corresponding implications which have been formulated.

Findings:

1. Of the 20 independent variables chosen for this study, 11 were found to discriminate significantly between the dropouts and retainers in the vocational curriculum. An analysis of these 11 independent variables identified two variables; Grade Point Average and Absenteeism to be unique significant predictors of the tendency to dropout.
2. A comparable analysis of the 20 independent variables identified 11 that significantly discriminate between the dropouts and retainers of the non-vocational curriculum. The analysis of these 11 variables indicated that the variable Absenteeism was the only variable that was a unique significant predictor of dropout status. Nine of these eleven variables were common to both groups; vocational and non-vocational. The two that were different for the non-vocational group were of the cognitive domain, GATB-P and F. Whereas, the two different variables for the vocational group were of the affective domain, OVI Value Prestige and the VDI.
3. An analysis of the 20 independent variables revealed that 18 of

these variables significantly differentiated among the four groups. The two variables that did not differentiate were GATB-M and Father's Education.

The analysis of these 18 variables resulted in identifying two significant discriminating functions that separate these four groups. These functions were named Cognitive and Socio-Affective, indicative of the types of variables of which they were composed. The non-vocational dropouts and the vocational retainers revealed similar characteristics on the cognitive function. In contrast the vocational dropouts and the non-vocational retainers show similar characteristics on the Socio-Affective function.

Implications

1. The best predictors of dropping out were found to be Grade Point Average and Absenteeism for the Vocational sample. The inter-relatedness of these two variables is difficult to separate; school personnel, teachers, counselors and administrators should be aware of both.

   a. Since the vocational dropouts valued those things that were not satisfied in the school environment, perhaps the school should attempt to provide more information about the world of work during the formation period of work values.

   b. Simulated work environment or cooperative education programs are two possible solutions to the dropout problem, since both provide the reinforcement of the

world of work and necessary inschool activities.

2. The similarity between the student characteristics of both groups; vocational and non-vocational indicate that it is possible to predict dropout proneness using similar traits as predictors.

   a. Since Absenteeism was the best predictor of dropping out for the non-vocational group, excessive absenteeism should be of interest to school personnel.

   b. Since Grade Point Average is not a significant predictor for this group perhaps more emphasis should be placed on other variables in making curriculum entry decisions.

   c. Since the amount of predictiveness of dropout status for the non-vocational sample (.09) is half that of the vocational sample (.19) it seems possible to identify vocational dropouts earlier in their program while preventive measures are still possible.

3. Although dropping out appears to be a negative overt response to the school environment, it was found that the socio-affective variables of the home and community contributed to this behavior. This indicates that cooperation is necessary among the community, social agencies, and the school since dropping out appears to be symptomatic of other underlying problems.

   a. Since the non-vocational dropouts and the vocational retainers were the most alike on the cognitive function, it seems likely then that non-vocational dropouts would have been successful in a vocational program. Conversely,

it seems unlikely that the vocational dropouts would succeed in the non-vocational curriculum.

b. Since the Socio-Affective function showed the least separation between the non-vocational retainers and the vocational dropouts this indicates that cognitive measures used alone are not sufficient indicators of dropping out. These measures combined with socio-affective measures provide a more realistic profile of a dropout since it has been shown that this behavior is somewhat predictable.

This research applied Holland's personality theory to a sample of vocational-technical high school students to determine their personality type and investigate the relationships between personality type and achievement. Personality types were related to several measures of achievement to see if greater achievement resulted when the student's personality type matched his educational environment. The major findings and implications drawn from this study are presented here.

Findings

1. Of the vocational students who were administered Holland's Vocational Preference Inventory (VPI), 57 percent were classified as Realistic personality types. The remaining personality types were found to be present in the following percentages: Intellectual, 8 percent; Social, 4 percent; Conventional, 9 percent; Enterprising, 10 percent; and Artistic, 12 percent.

2. Overall, there does not appear to be a relationship between scores on each of Holland's six personality scales and school achievement for vocational technical students.

3. Vocational-technical students whose personality type and the environmental type of their training surroundings match (i.e., are congruent) do not achieve higher grade point averages than those students whose personality type and training environment do not match (i.e., are incongruent).

4. The data indicate that congruent (i.e., Realistic) vocational-technical students do not exhibit higher levels of achievement than

incongruent students when achievement is measured by the student's course grade only.

5. When the Ohio Trade and Industrial Education Achievement Tests rather than shop grade were used to assess shop achievement congruent (i.e., Realistic) vocational-technical students again did no better than incongruent vocational-technical students.

Implications

1. Holland's hypothesis that people tend to select an environment consistent with their personality type is somewhat supported by the findings of this study. Therefore, the assessment of both students and shop environments using the Vocational Preference Inventory (VPI) could contribute to the shop selection process.

2. The assumption that all vocational-technical shops provide Realistic environments is questionable. An empirical assessment of the many kinds of vocational-technical shop environments would be beneficial to school personnel and students alike.

3. Although the use of three different kinds of in-school achievement criteria failed to produce a relationship between personality type and achievement, it cannot be assumed that personality type and success of other kinds or success at a later date is unrelated to personality type.

4. Although there are many ways presently used to group vocational-technical learning activities together, the possibility of clusters based on work environments is suggested by this study.

VDS CAPSULE MONOGRAPH NUMBER 9

This section is an abstract of the findings and implications of the study reported in this monograph. Hopefully, these short statements will serve as an informative summary of the content of this publication. It is desired that these brief elements will provide educators, researchers and other interested persons with enough readily accessible information so as to encourage the investigation of the total work.

This is a study of high school age girls and is a replication of a previous VDS study which utilized a sample of boys from the same population. The research problem is concerned with student curriculum selection and success in the chosen curriculum. The differences and similarities between girls and boys are the major findings.

Those interested in a closer comparison of the findings of this study with those of the previous study conducted with male students should consult: Kapes, Jerome T. The Relationship Between Selected Characteristics of Ninth Grade Boys and Curriculum Selection and Success in Tenth Grade. University Park, Pennsylvania: Department of Vocational Education, The Pennsylvania State University, August, 1971, VDS Monograph Number 2.

Findings

1. Girls differ from boys in that the selected curriculums for girls may not be divided simply into two categories such as vocational and academic.
2. Generally, the characteristics examined in this study are effective predictors of girl's curriculum selection and success in the chosen

curriculum. However, the female characteristics differ somewhat from those most predictive of male selection and success behavior.

3. Success, in terms of grade point average (GPA) in the chosen curriculum in tenth grade, is much more predictable than is curriculum choice.
4. Success in the academic curriculum is much more predictable than success in the various vocational curriculums.
5. The girl's verbal and numerical aptitude, vocational maturity, value of salary, and father's educational level are the most useful predictors of academic success in terms of grade point average (GPA).
6. Aptitudes most predictive of vocational success as measured by GPA are verbal and numerical aptitude, vocational maturity and the value of interest and satisfaction.
7. Examining the variability for the characteristics used in both the Kapes (1971) study and this study, it appears that the girls in this sample are more heterogeneous than the boys in the Kapes sample.
8. There appears to be sufficient separation among the eight groups composed of successful and unsuccessful students in four different curriculums that at least five different types of curriculum patterns are distinguishable.

Implications

1. The characteristic differences between girl's and boy's curriculum selection and success in the chosen curriculum, should be considered by curriculum planners and career guidance personnel. If equality or equal opportunity for the female student is to become a reality, unequal or different curriculum alternatives and guidance techniques may be required.

2. If the differences between girls and boys in terms of curriculum selection and success are brought about mostly by the socialization process than changes in that process will be necessary if differences are to be eliminated.
3. Given the greater variability among ninth grade girls than ninth grade boys, perhaps more and different curriculum alternatives are necessary for girls.
4. Whatever curriculum alternatives are provided for girls, they should not be structured along academic versus vocational (i.e., career versus homemaking) lines.
5. Guidance materials prepared for girls especially those used in a predictive or expectancy manner should differ from those used with boys.
6. Characteristics from the affective and socio-economic domains are useful with both girls and boys in providing additional information about curriculum choice and high school success not provided by cognitive characteristics.
7. Since with both girls and boys, academic success is more predictable from the characteristics used in this study than is vocational success, it may be necessary to consider more non-traditional success measures when counseling vocational students.

VDS CAPSULE MONOGRAPH NUMBER 10

It is the intent of these blue pages to provide a brief summary of the important aspects of the findings of this report along with their implications. The intent of this report is primarily to describe the Altoona sample in terms of their ninth grade characteristics as they relate to their tenth grade curriculum choice. Since no particular questions were asked concerning the relationship between student characteristics and curriculum choice there are no particular findings on which to focus. Furthermore, the statistics used to examine differences among curricula, while they could be considered to be inferential statistics, are intended primarily for their descriptive value.

The general outline of this report differs somewhat from previous VDS reports. Chapter I rather than dealing with a problem statement describes the community of Altoona and the ninth grade sample drawn from this community environment. Chapter II describes the primary variables utilized in this report. First of all, the five curricula which were available for the Altoona ninth graders to choose as alternative high school paths are described. Secondly, the ninth grade characteristics from the cognitive, affective and socioeconomic domains which were available to the VDS Project staff for profiling these ninth graders are described. The descriptions provided are brief, but are sufficient to allow the reader to obtain all the information necessary to interpret the tables and figures which comprise Chapter III. Chapter III itself contains an introduction with suggestions for reading and using the tables and profiles which make up the chapter.

Without focusing on any particular findings or implications, a number of suggestions can be made for the use of the information presented in this report. For those who are interested in the entire longitudinal VDS Project, this report provides the information necessary to draw some conclusions concerning the generalizability of findings based on the Altoona sample. Where the characteristics of this sample and the population from which it was drawn are judged to be similar to other school systems in Pennsylvania or elsewhere in the nation, findings from studies using this data could be applicable to these other school settings.

With the increasing number of Career Education experimental projects underway both in Pennsylvania and nationally, the data presented here could be used as baseline information where such external norm group information is necessary. For counselors and school administrators who have similar data and wish to make use of it for planning, evaluation or selection purposes, the information in this report could provide a much needed frame of reference. Where data on standardized tests are presented, the information could be used as norms which may be superior to national norms because of greater similarity of the sample to a particular local school situation. Suggestions for the use of the data for counseling purposes with future Altoona ninth graders have been pointed out in the introduction to Chapter III.

Finally, the data presented in the tables and figures in Chapter III can be examined to discover a multitude of relationships which might be of interest to school personnel as well as educational researchers. The analysis of any one variable across the five curricula constitutes a mini-study in itself which could answer a particular question concerning whether students in curriculum X (e.g. vocational) score higher or lower

on a particular measure than students in curriculum Y, Z, etc. Similarly, where categorical data is presented, the frequency of belonging to particular categories could be analyzed for each curriculum. Examining the data in this way could help answer important practical questions for school personnel as well as provide insights which could lead to future areas of inquiry for educational researchers.

VDS CAPSULE MONOGRAPH NUMBER 11

It is the intent of these blue pages to provide a brief summary of the important aspects of the findings of this report along with their implications. The intent of this report is primarily to describe the Hazleton sample in terms of their ninth grade characteristics as they relate to their tenth grade curriculum choice. Since no particular questions were asked concerning the relationship between student characteristics and curriculum choice there are no particular findings on which to focus. Furthermore, the statistics used to examine differences among curricula, while they could be considered to be inferential statistics, are intended primarily for their descriptive value.

The general outline of this report differs somewhat from most of the previous VDS reports, but is similar to monographs 10 and 12 dealing with the Altoona and Williamsport samples. Chapter I rather than dealing with a problem statement describes the community of Hazleton and the ninth grade sample drawn from this community environment. Chapter II describes the primary variables utilized in this report. First of all, the five curricula which were available for the Hazleton area ninth graders to choose as alternative high school paths are described. Secondly, the ninth grade characteristics from the cognitive, affective and socio-economic domains which were available to the VDS Project staff for profiling these ninth graders are described. The descriptions provided are brief, but are sufficient to allow the reader to obtain all the information necessary to interpret the tables and figures which comprise Chapter III. Chapter III itself contains an introduction with suggestions for reading and using the tables and profiles which make up the chapter.

Without focusing on any particular finding or implication, a number of suggestions can be made for the use of the information presented in this report. For those who are interested in the entire longitudinal VDS Project, this report provides the information necessary to draw some conclusions concerning the generalizability of findings based on the Hazleton sample. Where the characteristics of this sample and the population from which it was drawn are judged to be similar to other school systems in Pennsylvania or elsewhere in the nation, findings from studies using this data could be applicable to these other school settings.

With the increasing number of Career Education experimental projects underway both in Pennsylvania and nationally, the data presented here could be used as baseline information where such external norm group information is necessary. For counselors and school administrators who have similar data and wish to make use of it for planning, evaluation or selection purposes, the information in this report could provide a much needed frame of reference. Where data on standardized tests are presented, the information could be used as norms which may be superior to national norms because of greater similarity of the sample to a particular local school situation. Suggestions for the use of the data for counseling purposes with future Hazleton ninth graders have been pointed out in the introduction to Chapter III.

Finally, the data presented in the tables and figures in Chapter III can be examined to discover a multitude of relationships which might be of interest to school personnel as well as educational researchers. The analysis of any one variable across the five curricula constitutes a mini-study in itself which could answer a particular question concerning whether students in curriculum X (e.g. Vocational) score higher or lower

on a particular measure than students in curriculum Y, Z, etc. Similarly, where categorical data is presented, the frequency of belonging to particular categories could be analyzed for each curriculum. Examining the data in this way could help answer important practical questions for school personnel as well as provide insights which could lead to future areas of inquiry for educational researchers.

VDS CAPSULE MONOGRAPH NUMBER 12

It is the intent of these blue pages to provide a brief summary of the important aspects of the findings of this report along with their implications. The intent of this report is primarily to describe the Williamsport sample in terms of their ninth grade characteristics as they relate to their tenth grade program of studies. Because the tenth grade program of studies in Williamsport High School is very flexible and is not categorized into discrete curricula it was necessary to create curriculum categories which seemed appropriate for this analysis. Since no particular questions were asked concerning the relationship between student characteristics and curriculum choice there are no particular findings on which to focus. Furthermore, the statistics used to examine differences among curricula, while they could be considered to be inferential statistics, are intended primarily for their descriptive value.

The general outline of this report differs somewhat from previous VDS reports which dealt with specific research questions. Chapter I describes the community of Williamsport and the ninth grade sample drawn from this community environment. Chapter II describes the primary variables utilized in this report. First of all, the four curriculum categories which were created based on the student's actual program of studies are described. Secondly, the ninth grade characteristics from the cognitive, affective and socioeconomic domains which were available to the VDS Project staff for profiling these ninth graders are described. The descriptions provided are brief, but are sufficient to allow the

reader to obtain all the information necessary to interpret the tables and figures which comprise Chapter III. Chapter III itself contains an introduction with suggestions for reading and using the tables and profiles which make up the chapter.

Without focusing on any particular findings or implications, a number of suggestions can be made for the use of the information presented in this report. For those who are interested in the entire longitudinal VDS Project, this report provides the information necessary to draw some conclusions concerning the generalizability of findings based on the Williamsport sample. Where the characteristics of this sample and the population from which it was drawn are judged to be similar to other school systems in Pennsylania or elsewhere in the nation, findings from studies using this data could be applicable to these other school settings.

With the increasing number of Career Education experimental projects underway both in Pennsylvania and nationally, the data presented here could be used as baseline information where such external norm group information is necessary. For counselors and school administrators who have similar data and wish to make use of it for planning, evaluation or selection purposes, the information in this report could provide a much needed frame of reference. Where data on standardized tests are presented, the information could be used as norms which may be superior to national norms because of greater similarity of the sample to a particular local school situation. Suggestions for the use of the data for counseling purposes with future Williamsport ninth graders have been pointed out in the introduction to Chapter III.

Finally, the data presented in the tables and figures in Chapter III can be examined to discover a multitude of relationships which might be of interest to school personnel as well as educational researchers. The analysis of any one variable across the four curriculum categories constitutes a mini-study in itself which could answer a particular question concerning whether students in curriculum X (e.g. Industrial Arts) score higher or lower on a particular measure than students in curriculum Y, Z, etc. Similarly, where categorical data is presented, the frequency of belonging to particular categories could be analyzed for each curriculum. Examining the data in this way could help answer important practical questions for school personnel as well as provide insights which could lead to future areas of inquiry for educational researchers.

It is the aim of this section to provide a relatively brief summary of the findings and implications of this study without sacrificing accuracy. It is hoped that the discussion which follows will be of practical value to teachers, counselors, administrators, and other school personnel. It may well be that those school personnel in policy-making positions will find this discussion more helpful than other school personnel. In keeping with the objectives of this section, the following discussion will be as brief as possible.

Rationale for the Study

In order to provide meaningful relevant education for students during the secondary school years, education must be geared to enhance the student's plans for his future. Additionally, since the world we live in is changing at a rapid pace, education should seek to provide a flexible base from which each student can draw the capacities to adapt to the changes he will inevitably face during his lifetime. Especially notable are the continuing changes in the occupational structure.

Throughout their lifetime, most individuals aspire to many and varied occupations. It would be helpful to educators if they were able to determine when an individual had reached a point in his vocational development that his occupational choice would remain stable. If it were possible to determine when each individual had arrived at this point in his development, we would be able to provide better education

which would be more relevant to the needs of the individual. The aim of this study was to investigate if such a determination is possible.

Findings

The results of this study indicate that no student characteristics, of those investigated, serve as a denominator to separate those students who will express the same occupational choice throughout the secondary years from those who will not. The best indicator of stability of occupational choice throughout high school appears to be stability of occupational choice from ninth to tenth grades. Of those students who chose the same occupation in both ninth and tenth grades, two thirds of them continued to choose the same occupation at twelfth grade. Several other student characteristics increase the chances of stability of occupational choice. Students who are successful in terms of GPA, are enrolled in the Vocational curriculum, and are vocationally mature, are most likely to choose the same occupation throughout high school than their counterparts. It is also important to note that the student's socioeconomic background, sex, or the level of the student's occupational choice do not effect stability of occupational choice.

Implications

1. It appears that stability of occupational choice is largely a product of the environment, circumstances, or personality of the student. It appears that most students are not psychologically prepared to make stable occupational choices during their ninth and tenth years of school. This may, in fact, point to a need for the educational system to provide

activities and experiences during the elementary and junior high school years that are of an exploratory nature. These exploratory activities should be structured so the student gains accurate information about himself as well as difficult occupations. The student should also participate in educational activities which will develop his decision-making capabilities. Armed with information about himself and the world of work and with some experience in making decisions, more students could probably be expected to make stable occupational choices. It is unrealistic to expect stable occupational choices from students if they have only limited information upon which to base their choices.

2. The findings of this study reemphasizes the individuality of students. We have always known that people develop at different rates, but we have not always allowed for individual differences. The findings of this study point to the need for the educational system to allow students to change programs. Inasmuch as is possible, these program changes must be facilitated in a manner which costs the student the least. Certain students may benefit from vocational programs based upon a family of occupations concept, especially those who are experiencing difficulty in narrowing their choice to a specific occupation within a family. Other students may derive the maximum benefit from a program such as Industrial Arts which will allow for further exploration during some portion of, or the entire high school experience. This should not be taken to mean that training for specific occupations should not be offered at the secondary level because some students apparently are ready for such training. The findings of this study merely emphasizes that the educational system must adapt to the needs of the individual not make the individual fit the system.

3. The educational system must develop in students the attitudes and competencies necessary to reenter the system. Those who graduate or otherwise leave the educational environment must be encouraged to return should upgrading or retaining become necessary because of changes in the occupational structure or changes in the individual's occupational choice. Furthermore, it is not enough to pay lip service to such a philosophy. Reeducation programs must be designed to cause the minimum of inconvenience to the returning student. Such programs will probably become increasingly important as technology continues to influence our society.

The findings of this study appear to support the need for an integrated system of education from the elementary school through high school. Such an educational system should make the world of work a central focus of its program. Whether such a system is called Career Education or Education for the World of Work or by any other name, it should prepare the student as well as possible for the day he leaves the rather controlled environment of the school and enters the real world. In order for the student to make the transition as smoothly as possible, his total educational program should be relevant to that real world.

4. The findings of this study cast serious doubts upon the traditional manner in which Vocational Education has been evaluated. If secondary students do not make stable occupational choices, it is unrealistic to judge the total success of Vocational Education upon the criterion of the number of students working in the occupation for which they were trained. This is not to say that this criterion does not have merit for certain applications; however, no other facet of education is

subject to such a narrow evaluation criteria. Granted that Vocational Educators have done much to foster such an evaluative criteria, but the fact remains it is unrealistic given the present educational system. It would not be unlike evaluating the academic education program by the number of academic graduates achieving baccalaureate degrees. Until it can be determined that the majority of students are making stable occupational choices during the early secondary school years, evaluation of Vocational Education's success must be based on other criteria.

This section has been included in order to provide a brief summary of the findings and implications of this study. Educators, researchers and other interested parties hopefully can determine through this capsule whether or not the full report warrants their investigation.

This is a study of high school age students which examines various affective changes that occur in these students from ninth to twelfth grade. The effects that both time and curriculum has had upon these changes are investigated in this research effort. A brief description of the major findings is followed by a listing of some of the possible implications which may be drawn as a result of the findings.

Findings

1. The occupational value structure of students remained fairly stable from ninth to twelfth grade, but the differential between the highest and the lowest value score increased during this time period.

2. Students' vocational maturity scores generally increased from ninth to twelfth grade.

3. The number of students who had post high school educational plans which included attending college decreased from 51% in ninth grade to 42% in the twelfth grade.

4. For Vocational students, GATB aptitude scores increased from ninth to twelfth grades, and the twelfth grade mean scores were above the GATB General Working Population Sample mean of 100 with the exception of GATB-V. The variability of GATB scores also increased, and the correlation between ninth and twelfth grade scores was fairly high.

5. The results of this study indicate that the student characteristics studied become more diverse over the high school years.

6. Changes which occur in students' occupational values, vocational maturity and post high school educational plans seemed to be due largely to the effect of time, and to a much lesser extent, was effected by the curriculum in which the student was enrolled. In some instances curriculum did seem to play a major role.

7. Students who enroll in a curriculum which is designed to train for entry into generally familiar careers (e.g. Home Economics) tend to alter their value structure less than those who enroll in a curriculum which will prepare students for vaguely familiar careers (e.g. Academic).

8. Although this study dealt mainly with changes which occurred in affective measures, the change in aptitudes over the same time period was used as a comparative standard. Changes in the affective and cognitive domains seem to be congruent through the high school years.

Implications

1. Since the occupational value structure of high school students is fairly stable from ninth to twelfth grade, a survey of a student's values would be a reliable and useful counseling tool during the high school years.

2. Since students were more vocationally mature in twelfth grade than they were in the ninth grade, it would be expected that students could make better career decisions later in their high school program. Therefore, a choice of a specific occupationally oriented curriculum should not be mandated at a particular point in time, and for some students specific career decisions should not be made during the high school years.

3. At least 38% of students enrolled in any one curriculum, in this study, did not plan to attend college upon high school graduation. Therefore, occupational skills should be taught as an integral part of all curricula.

4. Since the correlation between ninth and twelfth grade GATB aptitudes was fairly high, the GATB profile can be used as a reliable counseling tool as early as the ninth grade with potential vocational students.

5. A broad base of curricular options is desirable for upper level high school students due to the increased diversity of their cognitive and affective characteristics. Options can readily be increased through individualized instruction, modular scheduling, and mini-courses.

6. The effect of time upon the change in selected affective characteristics of students is, for the most part, the same regardless of the curriculum in which the student is enrolled. Therefore, all curricula should be flexible enough to accommodate changing occupational goals.

7. Due to their stated objectives, the various curricula require a degree of commitment to a specific occupation or to a general class of occupations upon initial entry. This commitment may be instrumental in the change in the occupational values of students.

VDS CAPSULE MONOGRAPH NUMBER 15

It is the purpose of this capsule to provide a brief summary of the findings and implications of this study. Educators, researchers, and other interested parties hopefully will be able to determine through this capsule whether or not the full report warrants their investigation. The study is concerned with the occupational aspirations of adolescents during the time span from the end of ninth grade through the end of twelfth grade. For the purpose of this study two types of occupational aspirations were identified: those that were described as idealistic, and those that were described as realistic. Since the design for this study was longitudinal, it was possible to determine the change in level of occupational aspiration over time as well as the difference in level of occupational aspiration by comparing idealistic and realistic responses. The following sections include a brief description of the major findings of the study as well as the implications which may be drawn from these findings.

Findings

1. On the average, students do not change their level of idealistic occupational aspiration between the end of ninth, tenth and twelfth grades.
2. It appears that there is a significant change (downward) in the mean level of realistic occupational aspiration for students between the end of ninth, tenth, and twelfth grades.
3. For each time period, that is, near the end of ninth, tenth, and twelfth grades, there is a significant difference between the mean

idealistic occupational aspiration level and the mean realistic occupational aspiration level. This difference becomes increasingly greater as the students move from ninth to twelfth grade.

4. Overall, the study indicates a changing relationship between students' idealistic and realistic occupational choices as they progress through high school. This change is one of steady divergence, with the idealistic choice remaining relatively constant and the realistic choice changing steadily downward on the level continuum.

5. The construct of Level of Occupational Aspiration (LOA) as measured by Roe's classification scheme and the suggestion of Miller and Haller that occupational preferences be classified as idealistic versus realistic appear to be valid as supported by the results of this study.

Implications

1. The theories of Ginzberg et al. and of Super as well as the construct of Vocational Maturity appears to be supported by the findings of this study. The fact that a realistic choice does increasingly differ from an idealistic choice lends credence to the idea that developmental tasks dealing with reality are being accomplished during the high school years. The downward trend in level for the realistic choice is consistent with increased vocational maturity if one accepts the notion that the initial choices were too high and, therefore, unrealistic and immature.

2. Since the level of occupational aspiration, as it is realistically stated, changes significantly (downward) over the high school years, it is reasonable to assume that most students should not be forced to make specific occupational choices during the ninth grade. Commensurate with

this assumption; therefore, the high school curriculum should be constructed to provide for later decisions. This may mean, as Super has suggested, that the early high school years should focus on exploratory experiences. It may also mean that specific occupational training should be concentrated in post-secondary community college type institutions.

3. Given the finding that realistic occupational aspirations tend to move downward in level and diverge from idealistic aspirations over the high school years, perhaps the schools should play a greater role in providing reality testing experiences. These experiences could possibly take the form of cooperative education during the high school years.

4. Whenever the question of occupational aspiration is asked (whether it be for research purposes or for counseling purposes) it appears to be useful to differentiate between idealistic and realistic choices. For counseling purposes, the very fact that the counselee is forced to contemplate the difference between the two may be helpful to him in clarifying his occupational goals in terms of reality.

VDS CAPSULE MONOGRAPH NUMBER 16

This section is an abstract of the findings and implications of the study reported in this monograph. It is designed to serve as an informative summary of the content of this publication which, hopefully, will encourage the investigation of the total work.

This research compares selected in-school characteristics found to be significantly related to in-school success in previous VDS studies to on-the-job success as measured by the employer's evaluation. The sample consisted of male Academic and Vocational high school graduates who were engaged in employment approximately one year after graduation.

The research questions in this study are concerned with a comparison of job satisfactoriness (success as rated by the employer) for Vocational and Academic high school graduates, and the relationship of ninth grade student characteristics to job satisfactoriness approximately one year after graduation.

Findings

1. Neither the Academic nor the Vocational curriculum can be said to better prepare male graduates for employment one year after high school graduation based on the employer's evaluation of satisfactoriness.
2. The male graduate's verbal and numerical aptitude, and the occupational value of salary are most predictive of on-the-job success.
3. Although the exact nature of the relationship is not known, the male graduate's occupational value of interest and satisfaction appears to have an important relationship to the employer's evaluation of on-the-job success.

4. The vocational maturity level of male graduates as measured in ninth grade is negatively related to on-the-job success one year after graduation.

5. All of the factors found to be related to on-the-job success have also been found to be related to in-school success, although in this case, vocational maturity is negatively related to on-the-job success whereas it was positively related to in-school success.

6. The ability of ninth grade characteristics to predict on-the-job success evaluated by employers one year after graduation, (i.e., four years after the characteristics were measured), is of a relatively large magnitude considering the time duration and developmental instability of adolescent characteristics.

Implications

1. Curriculum alternatives should not be restricted to Academic versus Vocational choices. Vocational and Academic curricula must share goals and be considered mutually responsible for the success of graduates in future employment.

2. A career education approach which does not restrict individuals to narrow curriculum tracks could be the best method of providing the education necessary for success in the world of work.

3. Verbal and numerical skills appear to be as important to early job success as they are for academic success. For this reason, students expecting to enter employment immediately after graduation from High School should be provided with the same quality of instruction in these areas as are perspective college students.

4. In addition to cognitive factors (verbal and numerical ability), factors from the affective domain (occupational values and vocational maturity) appear to be very important to early job success. Clarification of these factors beginning as early as the ninth grade should aid initial job selection and subsequent job success.

5. Guidance and counseling personnel should take the variables found to be predictive of on-the-job success into account in both curriculum and job placement counseling. This information is apparently useful as early as the ninth grade. In addition, the ability to predict success in the world of work could be used in designing new programs to meet the needs of individuals and of society.

6. A program of testing and record keeping which could help to identify the individual predictive factors related to on-the-job success should be instituted in the schools for graduates of all programs.

These blue pages have been included in this report in order to provide a brief overview of the study including its major findings and implications. Although for many readers this capsule may be sufficient, it is hoped that many of those educators and others who have a particular responsibility for vocational-technical education will find the entire report useful. The study itself attempts to examine three basic characteristics of vocational-technical instructors (industrial experience, teaching experience and college credits earned) in terms of their relationship to student shop achievement as measured by the Ohio Trade and Industrial Education Achievement Tests (OTAT). The sample for the study consisted of 31 instructors and 876 junior and senior students from three area vocational technical schools in non-metropolitan Pennsylvania (Altoona, Hazleton and Jefferson-DuBois). Although each of the three school systems involved is described in some detail in this monograph, they have been nominally coded as X, Y, and Z to preserve some degree of anonymity. The following sections include a brief summary of the major findings of the study as well as some, but not all, of the implications which may be drawn from the findings.

Findings

1. The three teacher characteristics of industrial experience, teaching experience and college credits earned are fairly independent of one another. The greatest relationship exists between teaching experience and credits earned.

2. Among the three teacher characteristics examined, only college credits earned demonstrated a significant positive relationship to student shop achievement.

3. In some cases, years of industrial experience appears to be negatively related to student shop achievement.

4. The relationship between student ability and shop achievement was relatively low considering the expected relationship between ability and achievement.

5. There was evidence of a great deal of variability from one school system to another in the direction and degree of relationships among the characteristics examined.

6. In all three school systems studied, junior students achieved higher OTAT scores than senior students compared to national norms.

Implications

1. Because college credits earned were most highly related to student shop achievement it may be important to increase the amount of college level teacher preparation available to vocational-technical instructors. It may also be helpful to raise the minimum credit requirements for initial certification.

2. Since neither industrial or teaching experience were highly related to student shop achievement there appears to be every reason to encourage young men and women directly out of high school to pursue full-time college level preparation towards vocational teacher certification with the full expectation that they can become competent teachers soon after graduation.

3. Since many years of teacher industrial experience does not improve student shop achievement (in some cases as industrial experience increases, student achievement decreases) it may be necessary to minimize industrial experience as a criteria for initial teacher certification, or at least consider other competencies more important.

4. Given that the relationship between student ability and achievement was fairly low, emphasis for selection of students in vocational programs should be shifted from the cognitive domain to the affective domain (interest, values and motivation should receive greater attention).

5. Since junior students out performed senior students in comparison to national norms in all three samples, the nature of the senior year vocational shop experience should be closely examined. Perhaps senior students would benefit more from a cooperative vocational program than the traditional third year now offered.

6. Because there was such a great deal of variability (from one school system to another) in the relationships examined between teacher characteristics and student shop achievement, vocational educators need to be cautious in interpreting the results of this study. Additional studies using larger samples and examining a wider variety of characteristics are necessary before any of the above implications can be accepted with any degree of confidence.

VDS CAPSULE MONOGRAPH NUMBER 18

This blue page section has been included in this report in order to provide a brief summary of the findings and implications of this study. Teachers, counselors, administrators, and others interested in Vocational-Technical education hopefully can determine through this capsule whether or not the full report warrants their investigation. The purpose of this study was to compare the shop achievement of secondary vocational-technical students who received one year versus two years of AVTS instruction (one group attended the AVTS for both the tenth and eleventh grade while the other attended only for the eleventh grade year). The criterion variable used to make this comparison was the Ohio Trade and Industrial Education Achievement Test (OTAT). A brief description of the major findings is followed by a listing of some of the possible implications which may be drawn from the findings.

Findings

1 The study sought to investigate the relative benefits of beginning AVTS instruction in tenth as opposed to eleventh grade. When ability was not taken into consideration, the one year group did at least as well as the two year group in terms of shop achievement (OTAT).

2. The two groups selected for study were not equal in terms of ability and since ability is highly related to achievement in most cases, it was necessary to take ability into consideration when making comparisons.

3. When differences in ability were taken into account the findings suggest that those students who received twice as much instruction did do somewhat better on the shop achievement test as a total group.

4. When the question of achievement differences was examined independantly for each of five shop groups (Automotive, Machine Trades, Auto Body, Carpentry and a Mixed group of shops consisting of: Welding, Electricity, Electronics and Mechanical Drafting) only the Mixed group yielded significant differences in achievement. The lack of differences in shop achievement for the individual shops can, for the most part, be attributed to small sample size.

5. The two groups selected for study were also compared on OTAT subpart scores to further identify where differences and similarities existed. The profiles generally show the one year group to possess higher achievement than the two year group apparently due to ability differences which are also evident on the profiles. However, there are evidences of reversals in the pattern in a number of specific trade knowledge areas.

Implications

1. When making comparative evaluations of the effectiveness of vocational programs it would be a great mistake to assume that all other factors affecting student achievement are equal and that differences found are due to the treatment (e.g., the teacher, the curriculum, etc.).

2. Student ability is one obvious factor which must be considered in evaluating educational programs. Affective factors such as maturity,

interests and values also probably play a significant role. Because of the potentially great differences which may exist among groups of students, comparative studies (whether among vocational programs or between vocational and non-vocational programs) which do not consider all possible differences are likely to reach the wrong conclusions, especially concerning cause and effect relationship.

3. Beginning AVTS instruction in tenth grade does appear to result in greater student shop achievement at the end of eleventh grade than if only (one year) eleventh grade instruction is undertaken. However, the amount of increase in achievement appears to be small and may not be of practical importance. By the end of twelfth grade, it is possible that the differences may disappear altogether.

4. While certain gains in achievement are apparent for the tenth and eleventh grade group over the eleventh grade only group, the differences are quite variable from one specific trade knowledge area to another and from one shop program to another. Therefore, the importance of any differences depend somewhat on what is absolutely necessary to know about ones trade and what trade area is being considered. Some shop programs may suffer more than others from the elimination of the tenth grade year.

VDS CAPSULE MONOGRAPH NUMBER 19

It is the intent of the VDS Capsule to provide a brief summary of the important aspects of this report along with their implications. The focus of this report is primarily on describing the Hazleton AVTS sample in terms of their ninth grade characteristics as they relate to their twelfth grade shop program. Since no particular questions were posed concerning the relationship between student characteristics and shop program choice, there are no particular findings on which to focus. Furthermore, the statistics used to examine differences among shop program, while they could be considered to be inferential statistics, are intended primarily for their descriptive value.

The general outline of this report differs somewhat from most of the previous VDS reports, but is similar to Monographs 10, 11, and 12 dealing with the Altoona, Hazleton, and Williamsport samples and comparing ninth grade characteristics to tenth grade curriculum choice. Chapter I, rather than dealing with a problem statement, describes the community of Hazleton and the AVTS student sample drawn from this community environment. Chapter II describes the primary variables utilized in this report. First of all, the 14 shop programs which were selected for study from among the 23 programs available at the Hazleton AVTS are described. Secondly, the students' ninth grade characteristics from the cognitive, affective and socioeconomic domains, which were considered useful as counseling information and therefore selected for the study, are described. The descriptions provided are brief, but are sufficient to allow the reader to obtain all the information necessary to interpret the

tables and figures which comprise Chapter III. Chapter III itself contains an introduction with suggestions for reading and using the tables and figures which make up the chapter.

A number of suggestions can be made for the use of the information presented in this report. For those who are interested in the entire longitudinal VDS Project, this report provides the information necessary to draw some conclusions concerning the generalizability of findings based on the Hazleton AVTS sample. Where the characteristics of the AVTS students included in this sample are judged to be similar to other AVTS systems in Pennsylvania or elsewhere in the nation, findings from this and other VDS studies using this data could be applicable to these other school settings.

With the increasing number of Career Education experimental projects underway both in Pennsylvania and nationally, the data presented here could be used as baseline information where such external norm group information is necessary. For vocational counselors and school administrators who have similar data and wish to make use of it for planning, evaluation or selection purposes, the information in this report could provide a much needed frame of reference. Where data on standardized tests are presented, the information could be used as norms which may be superior to national norms because of greater similarity between this sample and other local school population. Suggestions for the use of the data for vocational counseling purposes with future Hazleton ninth graders have been pointed out in the introduction to Chapter III.

Finally, the data presented in the tables and figures in Chapter III can be examined to discover a multitude of relationships which might be of interest to school personnel as well as educational researchers. The

analysis of any one variable across the 14 shop programs constitutes a mini-study in itself which could answer a particular question concerning whether students in shop program X (e.g. Auto Mechanics) score higher or lower on a particular measure than students in shop programs Y, Z, etc. Similarly, where categorical data is presented, the frequency of belonging to particular categories could be analyzed for each shop program. Examining the data in this way could help answer important practical questions for AVTS personnel as well as provide insights which could lead to future areas of inquiry for educational researchers.

VDS CAPSULE MONOGRAPH NUMBER 20

It is the intent of this section of the report to provide teachers, counselors, administrators, and all others concerned with the vocational development process with relatively brief and practical interpretations of the major findings and implications of this study.

Rationale for the Study

Society has frequently called upon its institutions of formal education to provide viable solutions to the many and varied problems concerned with this country's development of its human resources. The ability of an individual to work consistently, and to receive satisfaction from this work, is necessary if society is to meet the needs of its individual members and maximize its human resources. Work satisfaction must, therefore, become a concern of all educators. Since high school represents, for some, the last experience with formal education before entering into a lifetime of work, consideration must be given to in-school student characteristics and their relationship to employment satisfaction. It is with these variables that the school is able to deal and promote change related to the total growth potential of the individual and to the well-being of society.

Findings

There were four criterion variables in the model developed in this study which were evaluated using the total sample and the separate male and female samples. These four variables were: High School Curriculum (Vocational, Non-vocational), Achievement (Grade Point Average-11th

grade), Vocational Maturity (Vocational Development Inventory-12th grade), and Work Satisfaction (Minnesota Satisfaction Questionnaire-1 year after graduation from high school).

The first criterion variable to be considered in the model was Curriculum (Vocational-Non-vocational). The only student characteristic significantly related to Curriculum was the Sex variable, in the total sample. The Curriculum variable was not predictable by the combination of variables in the other two samples.

Achievement (GPA) was the next criterion variable to be analyzed and was found to be the most predictable of the four. Of the characteristics used in the model, General Aptitude Test Battery (GATB-G), Sex, Occupational Value "Salary," and Curriculum were related to GPA in the total sample. GPA was next best predicted by GATB-G and Occupational Value "Salary" in the female sample. GATB-G and Curriculum were significantly related to GPA in the male sample.

The third criterion variable to be analyzed was Vocational Maturity (VDI). GPA was significantly related to the VDI in the total sample and the female sample. Occupational Value-"Interest and Satisfaction," along with GPA, were related to the VDI in the male sample only.

Employment Satisfaction (MSQ) was the final criterion variable to be considered in the model. The variables: Occupational Values-"Interest and Satisfaction," and "Salary," and Vocational Maturity (VDI), (all variables from the affective domain), were significantly related to the MSQ in the total sample and the female sample. The MSQ was not predictable by the variables in the model for the male sample, but was predictable for females and the total sample.

In summary, employment satisfaction was twice as predictable for the female sample as it was for the total sample, and it was not at all predictable for the male sample.

Implications

1. The results of this study indicate that employment satisfaction for females was predictable to some extent while employment satisfaction for males was not predictable using the model. The variables which were useful in predicting satisfaction for females were all associated with the affective domain. This association, combined with the fact that satisfaction for males was not predictable, seems to indicate that males need additional attention to the development of those components of the affective domain which relate to satisfaction. Teachers, administrators and curriculum specialists must, therefore, include experiences within current and future courses of study which will provide all students the opportunity to develop their affective characteristics.

2. The findings of this study indicate that overall job satisfaction is related to variables which are associated with the affective domain. In this study these variables were: Occupational Values-"Interest and Satisfaction" and "Salary," and Vocational Maturity. These characteristics should receive additional attention by school personnel, especially those concerned with curriculum, and incorporated into courses available to students. It must be pointed out that affective domain development largely takes the form of identification and clarification of components of the domain rather than the transmission of skills and knowledges. It is felt that by placing additional

emphasis on the development of the affective domain the students will be provided with an opportunity for a more realistic view of the world of work in respect to themselves.

3. The findings of this study lend support to the concept of Career Education by drawing attention to the relationship between the affective domain and employment satisfaction. Career Education stresses the institution of work and the relationship between the school experience and the work environment. In addition, it attempts to provide individuals with exposure to the necessary components of work so that the work portion of the life of an individual may be as satisfying as possible. In addition to supplying this exposure, Career Education must continue to stress the total development of individuals. That is, it must provide opportunities for students to identify personal needs, values, and interests. Once these factors are identified and their relationship to the work environment understood, the individual should be better able to realistically relate to the work environment and become a more satisfied and contributing member of society.

4. Perhaps the overarching or global finding of this study is that female employment satisfaction was much more predictable than male employment satisfaction. The predictability of work satisfaction in the female sample may be attributed to the following:

a. For the most part, entry level jobs are associated with lower levels of responsibility, low salaries and little or no immediate opportunities for advancement. The expressed satisfaction by females with jobs of this type may be attributed to the fact that most females tend to possess short range expectations of initial employment. This is described by occupational

sociologists as the "until" phenomenon. The first job is usually transitional by nature and provides most females with a socially acceptable bridge between school and marriage. Those who do not marry eventually begin in their employment to seek job factors similar to those desired by their male peers.

b. In spite of the effort of the schools to provide all students with equal educational opportunities and to remove as much as possible sex biases in curricular offerings and instructional practice, it seems that the early experiences females have in both the home and school negate the attempt by the schools to provide equal cultural and educational experiences.

c. An analysis of the occupational areas which attract the majority of females indicates that women obtain employment in areas which are high in interpersonal social relationships. This implies that women may rank satisfaction received from the social environment above factors such as salary, responsibility and prestige. This greater emphasis on a rewarding social environment as one occupational preference for the typical female seemingly may compensate for factors which contribute toward job dissatisfaction in males.

d. Historically, females have not viewed employment with regard to long-range security and promotional possibilities. This failure to view employment from this perspective suggests that females possess lower levels of occupational aspirations than do males. It seems then that their satisfaction with entry level occupations may be attributable to these generally lower levels of aspiration.

Other Publications

A. Papers presented at professional meetings

Clark, D. A., Impellitteri, J. T. and Kapes, J. T. "Longitudinal Career Development Research and Implementation: A Cooperative Approach." American Vocational Association Convention, December 5, 1971.

Impellitteri, J. T. "The Nature and Measurement of Occupational Values." Northeastern Educational Research Association Meeting.

Impellitteri, J. T., and Kapes, J. T. (with vocational counselors from Altoona and Hazleton). "A Longitudinal Study of Vocational Development: Guidance Implications." Pennsylvania School Counselors Association, March 16, 1972.

Impellitteri, J. T. "Occupational Values in Adolescent Development." American Personnel and Guidance Association, Chicago, March 27, 1972.

Kapes, J. T. "The Ipsativity Problem of Work Values Measurement, and Proposed Solutions." Northeastern Educational Research Association Meeting.

Kapes, J. T. "Utilizing Ninth Grade Characteristics to Describe Tenth Grade Vocational and Academic Boys." American Educational Research Association, March 23, 1972.

Kapes, J. T. "Ninth Grade Information for Tenth Grade Prediction." American Personnel and Guidance Association, Chicago, March 27, 1972.

Kapes, J. T. "A Longitudinal Vocational Development Study: Some Findings and Implications." American Educational Research Assocation, New Orleans, February 27, 1973.

Kapes, J. T., Enderlein, T. E. and O'Reilly, P. A. "The Longitudinal Vocational Development Study (VDS) Project: A Five Year Report." American Vocational Association Convention, December 5, 1973.

Articles Based on Project Data

Brantner, Seymour T. and Enderlein, Thomas E. "Identification of Potential Vocational High School Dropouts." Journal of Industrial Teacher Education, 1973.

Enderlein, Thomas E. and Enderlein, Maxine A. "An Examination of the Relationship of Selected Student Variables to Vocational-Technical Shop Achievement." Journal of Industrial Teacher Education, Summer, 1973.

Kapes, Jerome T. "Differentiating Among Successful and Unsuccessful Vocational and Academic Tenth Grade Boys." Journal of Industrial Teacher Education, April, 1972.

Kapes, Jerome T. and Long, Thomas E. "An Assessment of the Criterion-Related Validity of The Ohio Trade and Industrial Education Achievement Test Battery." Journal of Industrial Teacher Education, Fall, 1971, Vol. 9, No. 1, pp. 6-14.

Kapes, Jerome T. and Seivert, Norman W. "Measuring Manual Dexterity with the GATB: A Comparison Between Wooden Vs. Plastic Pegboards." Journal of Employment Counseling, June, 1973.

Kapes, Jerome T. and O'Reilly, Patrick A. "A Model for the Use of Success Criteria in Vocational-Technical Education Research." Journal of Industrial Teacher Education, 1973.

Kapes, Jerome T. and Strickler, Robert E. "A Longitudinal Study of Characteristics in Work Values Between 9th and 12th Graders as Related to High School Curriculum." Journal of Vocational Behavior (Accepted for publication).

C. Other related papers

Dixie, Theodore C. "The Relationship Between Selected Characteristics of Secondary School Graduates and Job Satisfaction." Doctoral Thesis, June, 1974.

Martin, Randall B. "Work Values in a Selected Group of College Students." Unpublished Paper, December, 1971.

Yocum, Sharon L. "Differences in Characteristics of Tenth Grade Girls Choosing to Enroll in Academic and Vocational Curriculums." Masters Paper, October, 1973.

One Year Follow-up Questionnaire and Procedure

The one year follow-up questionnaire used with the Altoona sample consisted of a four part two page inventory developed and printed on standard answer sheet forms. All respondents were instructed to complete Part A of the questionnaire, and one additional part most appropriate. Those in school were instructed to complete Part B, those employed completed Part C and those unemployed completed Part D.

Figure 3 contains the flow diagram of the questionnaire mailing strategy. The questionnaire packet contained:

1. The questionnaire - printed on white paper using light green ink and green shading (see Appendix A).
2. Stamped (using wildlife stamp because of its ecological emphasis) return addressed envelope.
3. Pencil inscribed with the words - The Pennsylvania State University.
4. One incentive - a combination key chain screwdriver - one side imprinted with the zodiac and the other inscribed - VDS Project Penn State 1973.
5. One ticket - to be filled out and returned with the questionnaire to be used in a prize drawing. The drawing prizes included a portable color television, six AM/FM clock radios, and 35 pair of major league baseball tickets.
6. Cover letter - printed on buff color paper and fully explaining the follow-up questionnaire.

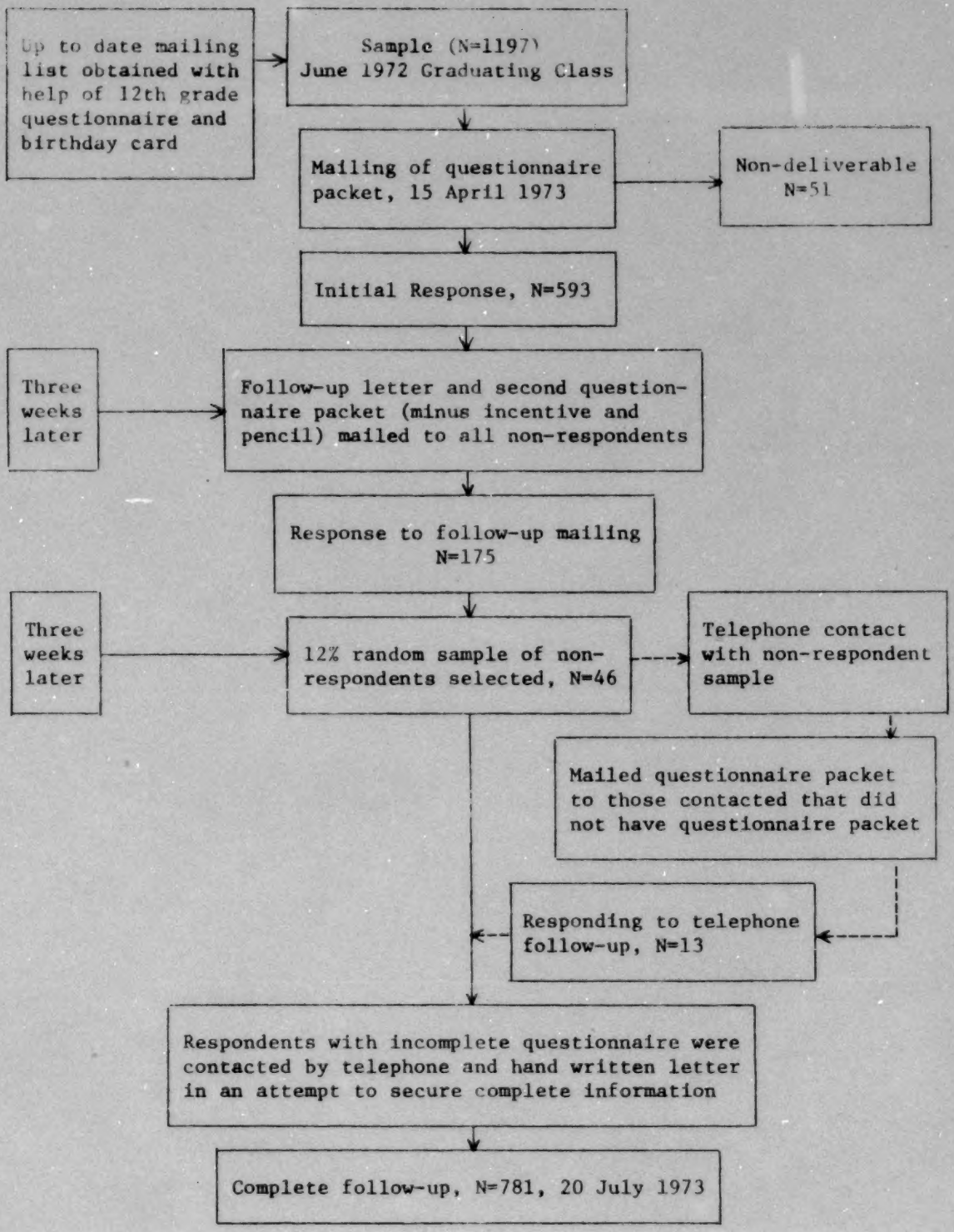

Up to date mailing list obtained with help of 12th grade questionnaire and birthday card
Sample (N=1197) June 1972 Graduating Class
Mailing of questionnaire packet, 15 April 1973
Non-deliverable N=51
Initial Response, N=593
Three weeks later
Follow-up letter and second questionnaire packet (minus incentive and pencil) mailed to all non-respondents
Response to follow-up mailing N=175
Three weeks later
12% random sample of non-respondents selected, N=46
Telephone contact with non-respondent sample
Mailed questionnaire packet to those contacted that did not have questionnaire packet
Responding to telephone follow-up, N=13
Respondents with incomplete questionnaire were contacted by telephone and hand written letter in an attempt to secure complete information
Complete follow-up, N=781, 20 July 1973

Figure 3. Flow Diagram of Questionnaire Mailing Strategy.

Although the entire questionnaire packet is not included in the appendix, copies of the questionnaire packet are available from the VDS project upon request. Consideration for the use of incentive and colored ink and paper were made with reference to an article describing follow-up research by Pucel, et al. (1971)[1] concerning incentives and responder characteristics.

After a three week time period, a second packet was mailed to the non-responders. The packet was identical to the original, however, it did not include a pencil or the incentive, so as not to provide positive reinforcement for non-responding. After a second three week period elapsed, and attempt to sample the remaining non-responders (a 12% random sample) was undertaken in hope of obtaining enough returns to compare responders and non-responders. This sample was contacted by telephone and encouraged to respond. Another questionnaire packet minus pencil and incentive was then supplied to those contacted by telephone that, for whatever reason, did not have one.

If a questionnaire was returned and contained incomplete information, the respondents were contacted by telephone and/or a hand written letter and asked to supply the missing information. The total time for this procedure extended from 15 April 1973 to 20 July 1973 or a period of about three months. Table 4 provides the return results of the follow-up.

---

[1] Pucel, D. S., H. F. Nelson, D. N. Wheeler. "Follow-up Returns as a Function of Incentives and Responder Characteristics," Vocational Guidance Quarterly, pp. 188-192, March 1971.

Table 4. Response to Altoona Follow-up Questionnaire for Class of 1972.

Action	Number
Initial Mailing	1197
Non-Deliverable	-51
Sub total	1146
Total Graduates	1056
Total Dropouts	90
Initial Mailing Response	593
Response to Follow-up	175
Response to Telephone Follow-up (12% of non-responders after follow-up [385] = 46)	13
Total returns	781
Percent of Total Returns (781/1146)	68%
Percent of Graduate Returns (Total graduate returns/total graduates) (752/1056)	71%
Percent of Dropout Returns (Total Dropouts) (29/90)	32%
Number of Returns by Part	
Part A	781
Part B	305
Part C	380
Part D	96

From Table 1 it can be seen that 68 percent of those mailed a questionnaire packet returned a questionnaire. Upon tabulation of the return data it was shown that 71.2 percent of those members of the sample that graduated returned a questionnaire. It was interesting to note that 32% of the dropout group returned a questionnaire. This percentage was quite high considering that these were individuals which severed their formal relationship with the school system before graduation. Perhaps the attractiveness of the incentives may be used as one explanation for this response.

The overall 68 percent return rate and the 71.2 percent of the graduate returns must be considered quite high in light of what is known about follow-up survey return rates. One can only hypothesize the reasons for this rate of return. Perhaps it can be attributed to the continued personal contact with the sample from ninth grade through their high school career by the VDS staff. In addition, surely the incentives, both the screwdrives which all received and the chance to obtain one of the prizes to be awarded to those which returned a questionnaire and filled out a possible prize ticket, must have added to the number of returns.

It can be concluded that personal contact and incentives indeed increase the return rate of follow-up surveys. However, it is impossible to conclude what proportion of this increase was due to these two factors.

Dissemination of Project Publications:

The project reports have received wide distribution throughout the country. The mailing list for each report consists of approximately 350 names. Copies of the reports are distributed approximately as follows:

10 - Pennsylvania Research Coordinating Unit

20 - Participating school system

20 - Bureau of Vocational, Technical and Continuing Education personnel

42 - State RCU directors

36 - Penn State Campus

30 - Department of Vocational Education, Pennsylvania State University

105 - Area Vocational Technical School Directors in Pennsylvania

85 - State and National Vocational Education and Vocational Guidance leaders

Additional copies of the reports are disseminated upon request. Table 5 shows the requests honored through the VDS project office as well as the requests coming through VEIN. Availability of the reports has appeared in several guidance and vocational education publications.

Table 5: Monograph Requests

Monograph Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Direct Requests	89	73	148	7	8	7	94	10	50	0	3	4	65	31	12	a	a	a	a	a
VEIN Requests	155	b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Regular Dissemination	350	350	350	350	350	350	350	350	350	350	350	350	350	350	b	a	a	a	a	a
	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350

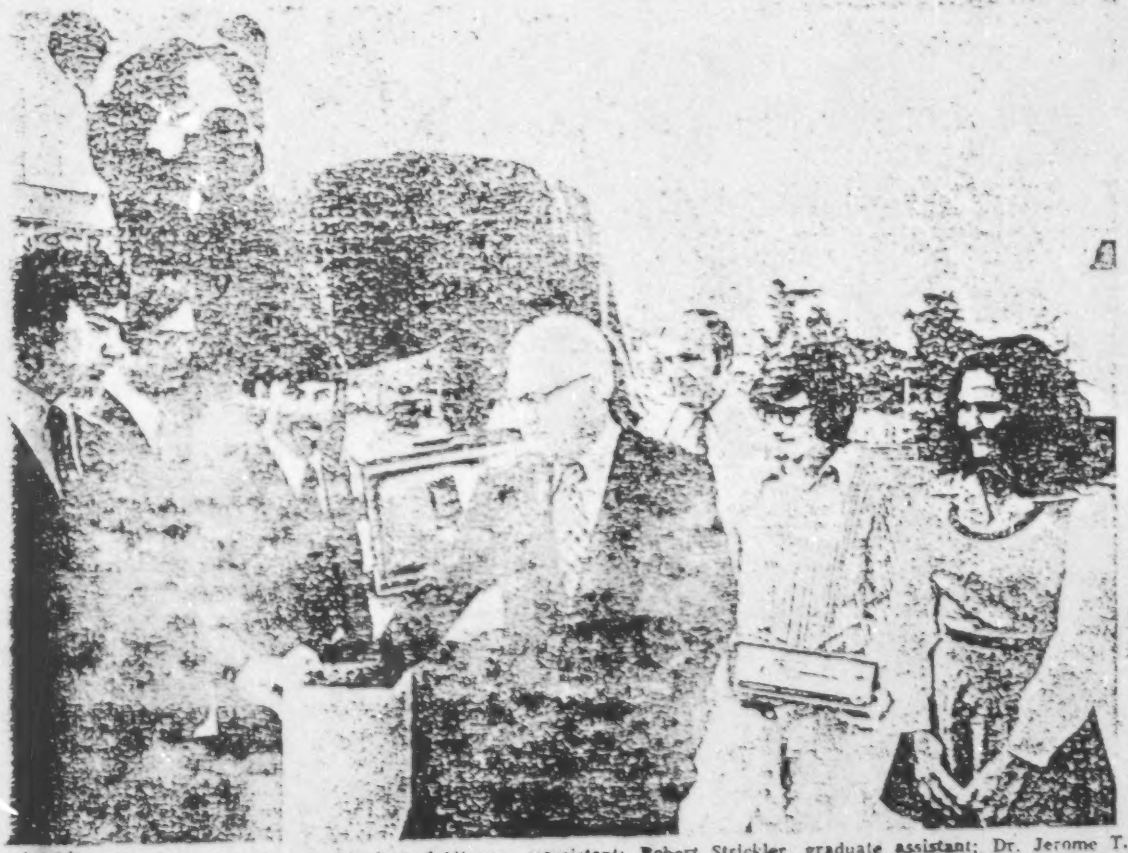
NOTE: a. recent publications
b. VEIN acknowledged requests for other monographs but a count of these requests was not available

Publicity

It was the intent of the Vocational Development Study staff to maintain a cooperative, mutually beneficial relationship with each of the three participating school districts as well as the local communities.

At various times the VDS Project was discussed and its intent explained to members of the news media, to assure a more complete understanding of the intent and purposes of this study.

The following are examples of newspaper items describing various phases of the VDS project. One each, representing the three participating school districts; Altoona, Hazleton, and Williamsport.



NNER — Edgar J. Brooks, former principal of Altoona School, draws the name of the winner of a color tele-. The drawing, for a total of 42 separate prizes, was y Pennsylvania State University as an incentive for of the AAHS Class of 1972 to return survey forms. (left to right) are: Thomas Enderlein, PSU research assistant; Robert Strickler, graduate assistant; Dr. Jerome T. Kapes, vocational development project director; Herbert S. Bolger Jr., Altoona Area Voc-Tech School guidance counselor; Roger Koon, president of the Class of 1972, and Debbie Dionis, class secretary. The class has been followed since its 9th grade year and the study is to continue until 7 years after graduation.

PSU Discovers 'Drawing Card' For Survey

Pennsylvania State University has found the right "drawing card" for its vocational development study of the Altoona Area High School Class of 1972.

Of 1,000 questionnaires sent to the graduating members of the class, about 750 were returned, according to Herbert S. Bolger Jr., guidance counselor at Altoona Area Vocational-Technical School.

Forty-two of those who returned the survey forms won prizes for their interest in the ongoing program that began with the class' 9th grade year and will continue until seven years after graduation.

The purposes are many, but the primary aim is to determine if there are effective means of predicting occupational success of students prior to and during their high school years in order to provide more effective counseling to future students.

The Class of 1972 completed various test instruments while in grades 9 to 12. They are then going to be asked to complete a follow - up questionnaire their first and seventh year after graduation. These results will be important in the final results.

The first prize in the drawing held Wednesday morning went to Susan Suckling of 2614 Beale Ave. The prize was a 16-inch portable color television set.

Six second prizes of AM-FM clock radios went to Marcie Harpster of 425 E. Bell Ave., Michael Hayes of 1400 21st Ave., Donald L. Markel of 422 7th Ave., Juniata; Barbara Stevens of 1800 8th St., Paula M. Stoltz of 1601 3rd St., and Pamela E. Swope of 520 7th Ave.

There were 35 third prizes of two tickets to a doubleheader between the Pittsburgh Pirates and the Philadelphia Phillies in Pittsburgh on July 29. They were won by:

Gloria M. Beatty of 810 6th Ave., Sheryl A. Broda of 2217 11th Ave., Judy A. Burns of Box 474, RD 1, Susan M. Calhoun of 1125 Rose Hill Drive, Donald Castagnola of 2201 Hudson Ave., David W. Ciccarella of 1541 Pleasant Valley Blvd., Steven L. Colyer of 106 Pottsgrove Road.

John J. Cox of 302 7th Ave., Juniata; Don [illegible] of 329 22nd Ave., Duncansville; [illegible] of 1024 3rd Ave., Juniata (Summers); [illegible] tricia Finochio of [illegible] nut Ave., Alice Grabil of Hagerstown, Md.; Charlene Graffius of 19[illegible] 16th St.

Vivian J. Green of 2906 Pine Ave., Nancy J. Grove of 510 5th Ave., Juniata; Dennis Hainly of Box 398, RD 4; Dana Kaye Holland of 315 7th Ave., Juniata; Linda A. Holsinger of 1011 25th Ave., Gary Keefer of Box [illegible], RD 2, Fred Khaleaf of 5420 Kissell Ave.

Bruce Kingsbury of 704 Beaumont Drive, Stephen Knouse of 1222 Rosehill Drive, Bob Lardieri of 2012 20th St., Gary C. Lepore of Fort Carson, Colo.; Dorothy L. Morgan of Duncansville RD 3, Dave Moyer of 1121 15th Ave., Linda Pfahler of 27C Greenwood Road.

Linda Pugh of 2817 Maple Ave., Robert Schellhammer of 999 30th St., Susan A. Shaffer of Box 632, RD 4; Dora Lynn Shannon of 420 5th Ave., Debbie Shelow of 420 4th Ave., Debra Lynn Smith of 508 25th St. and [illegible]

...leton Standard-Speaker, ...day, April 6, 1971

Career Study Begun at Vo-Tech As Part of Penn State Sampling

By CHUCK GLOMAN

How well does a high school freshman know his own abilities?

How accurately can he predict today what he later will pick for his life's work?

And how successful will he be in that line of work?

The answers to these questions are being sought in a unique 10-year testing program in career interest and ability for which Hazleton has been selected as a sample area.

Taking part in the tests, conducted by Pennsylvania State University, are 1,189 students — every ninth grader in the Hazleton Area School District, including those from public and parochial schools.

10-Year Follow-up

What makes the testing unusual is a planned annual follow-up study of the same individuals for the next decade, including the mailing of questionnaires to their homes, to determine how accurately each student's career aptitude registered in school depicts his eventual job placement and his success in that job.

Phase One of the long-range testing program is underway at the Hazleton Area Vocational-Technical School under the direction of Dr. Joseph Impeleteri, head of Penn State's Vocational Education Department.

The students, bused from public and parochial schools throughout the district to the vo-tech site at Maple Manor, are being tested on 60 different job areas, ranging from professional and technical positions to skilled and semi-skilled occupations.

Scope of Testing

By the end of April, all 1,189 ninth graders in the district will have been tested on their general aptitude, career interest and vocational development (background, anticipated goals and job preference).

The completed tests will be reviewed and compared with national norms.

The immediate result will be a nationwide comparison of students in aptitude, curriculum choices and preference of career.

Long-Range Goal

The long-range goal is to follow the same 1,189 students year by year for the next decade, collecting similar information by questionnaires. Each year, the new data will be compiled and compared with national norms, and with the individual student's previous aptitude and career information.

"Each year," explained Anthony Murdocca, guidance counselor for the vo-tech school, "we will be able to compare the aptitudes each student originally indicated with how he eventually related to success in a chosen field."

At the end of the 10-year period, the year by-year data will help counselors and other school administrators here and throughout Pennsylvania to assist students in choosing their life's work, lessening the chances of frustrating experiences.

Thus, the data is expected to provide counselors with an additional tool to help ninth graders make a more mature career decision.

By the time they reach ninth grade, most students are expected to select either the academic (college preparatory), general or commercial course for the remainder of his high school study.

At the end of the ninth grade, an additional choice is offered—vocational-technical training.

No matter what his choice, the high school freshman of tomorrow will be aided by the Hazleton area's ninth graders of today in making a mature decision in selecting his life's work.

BILLTOWN Banner

VOL. 23, NO. 17 WILLIAMSPORT AREA HIGH SCHOOL, WILLIAMSPORT, PA., 17701 MAY 17, 197

VDS is nothing to be afraid of

By MARGARET OGDEN

[illegible] according to the project director, Dr. Jerome T. Kapes.

[illegible] each month each, and will continue five years after graduation. This questionnaire [illegible] graduates in early April of 1975. Testing was done here in April.

[illegible] do their utmost to fill out the questionnaire and return it so that we can help future students [illegible] students in Pennsylvania," remarked Dr. Kapes.

The three major purposes set for VDS are to evaluate high school programs, to investigate the use of guidance counselin [illegible] and inventories, and to study the process of vocational development. Vocational development is the process that tal place during the adolescent period in learning to the changes which take place in students eventually for employment.

VDS [illegible] to examine student changes such as: how do students feel about high school experiences and what role [illegible] high school play in the future of the students?

The study began in Altoona in 1966. In 1970, Hazelton and Williamsport were added to the program.

"The project staff of VDS would like to assure all students that all information given over the years is confidential and is co [illegible] strictly for a number file," Dr. Kapes said.

"As a token of our appreciation, the graduating class was given blue notebooks," said Dr. Kapes.

He [illegible] anyone visiting the Pennsylvania State University should feel free to stop in at the VDS project offices in the Depart [illegible] of Vocational Education, 250 Chambers Building.

IV

IMPACT OF THE OVERALL PROJECT

Introduction

This chapter deals with a number of contributions which the VDS Project has made since its beginning in 1968. The recipients of these contributions range from the three school systems involved in the project (Altoona, Hazleton, and Williamsport), to the Department of Vocational Education at Penn State, as well as to the State and National level. Many of these contributions are difficult to judge at this time and indeed probably many more are not even known to the VDS Project staff. In order to view the possible contribution the project may have made, those contributions evident to the project staff are described below under the headings: Contributions to the School Systems Involved and Overall Contributions. In describing potential contributions which the project may have made, this report does not attempt to be judgemental concerning the magnitude of the contribution, but only attempts to call attention to areas of contribution.

Contributions to School Systems Involved

In an attempt produce as many benefits as possible from this research effort, a close relationship was established with the three school systems in the study; Altoona, Hazleton, and Williamsport. As a result of this relationship, an exchange program among the participants was established which benefited the VDS Project, the individual school systems, and all of education. Each time data was collected which was of benefit to members of this

relationship and, in some cases, outside public agencies, this data was shared within the framework of the issue of confidentiality and the highest respect for individual concerns.

During the three years this project existed, periodic seminars were conducted with members of the VDS staff and each school system. Representatives of the school systems included teachers, administrators and guidance counselors. The representatives of the VDS staff included the project director, project coordinator, research assistants, graduate research assistants and faculty members directly concerned with the outcomes of this research effort. In addition, consulting services were provided with each school system in an attempt to answer specific questions and to interpret the results of tests and inventories. Input into the construction of the data collection devices, such as, the twelfth (12th) grade questionnaire, the biographical data cards, and the one-year after graduation follow-up questionnaire was provided by the guidance counselors from each school system.

Data collected by the 12th grade questionnaire was supplied to the school systems, particularly to the guidance personnel, to provide them with feedback information concerning various aspects of the high school experience as viewed by the participants of the programs. Input into the one-year after graduation follow-up questionnaire was provided by the school personnel since this follow-up would take the place of the usual follow-up survey conducted by the guidance offices of the school systems. Descriptive data from the Altoona one-year after graduation follow-up--the only one conducted--was provided to the Altoona school system.

Since the students in the three specific classes from the three school systems were the ones with whom we had the most contact, it was felt that as a gesture of our appreciation for their cooperation in providing the project with data, each student was given a blue vinyl three ring notebook engraved with the words VDS Project. In addition, pencils engraved with the words The Pennsylvania State University, were given to the students at various data collection sessions.

A number of standardized tests and inventories have been used by the VDS project for inclusion with the data. These tests and inventories include: The General Aptitude Test Battery (GATB), an ability measure, The Ohio Trade and Industrial Education Achievement Tests (OTAT), a measure of student shop achievement, and The Ohio Vocational Interest Survey, a measure of vocational interests.

The GATB was administered to the Altoona, Hazleton, and Williamsport samples by the VDS project staff. The results of the GATB were added to the project data and shared with the school districts. In addition, the Altoona GATB data was also shared with the Bureau of Employment Services in that city. As a result of this effort by the VDS project, the GATB is now being administered in the three school systems and the data utilized by their guidance offices.

The OTAT was paid for and administered by the VDS project staff in both the Hazleton and Williamsport school systems. This data was also shared between these school systems and the VDS project. The Altoona school system administered the OTAT and shared the results with the project. In return, the project staff developed shop profiles from the Altoona OTAT data and supplied these profiles to the Altoona school

system for use by the guidance staff. This type of profile analysis with the OTAT was also adopted by the Hazleton and Williamsport AVTS's.

The VDS Project paid for and administered the OVIS to both the Hazleton and Williamsport samples. Once again, this data was shared with the school systems and the project. Copies of the OVIS reusable booklets were donated to the school systems for their further use.

The above is a description of the specific information provided to each of the three school systems included in the sample. It is not possible to describe all of the general information, in terms of conferences, phone calls about specific problems, assistance in answering questions about research being conducted and general association with each of the school districts as a result of this project. It is through this last effort that the real benefit of a research program of this scope and duration is realized.

Overall Contributions

Overall contributions of the project include, but are not limited to, those directly involving the three school systems of Altoona, Hazleton, and Williamsport. In addition to the contributions to these school systems described in the previous section there appears to be, from the vantage point of the project personnel, a more global contribution which could be termed "an increase in the awareness of the vocational development process." Through the contact with each of these schools as well as neighboring schools in Pennsylvania on a day by day, year by year basis for the purpose of carrying out the mechanics of the project this increased awareness began to

evolve. The degree to which this awareness was actually being affected by the project is not possible to objectively assess by the project staff. However, evidence of this effect should be observable by those individuals in each school system such as vocational directors, vocational guidance counselors, other guidance personnel, and other administrative personnel.

Although the collection of the data took place in the school systems involved, the analysis of the data took place in the Department of Vocational Education at Penn State. A second area of contribution made by the project therefore is at the graduate education level in the Department of Vocational Education. It has been about 10 years since funds for research have been released under the Vocational Education Act of 1963 and subsequent amendments. During this 10 year period, there were a number of vocational educators, primarily at the university level, who believed that the best investment for research funds was in the preparation of researchers rather than in the conduct of research. This position was taken because it was believed that there did not exist in vocational education a large enough body of research scholars capable of spending the research dollars in a profitable way. On examining the products of many of the early research ventures undertaken with vocational education funding it can be seen that much of the research was conducted either by qualified researchers who did not understand many of the problems worthy of investigation in the vocational education domain. Where this was not the case research was conducted by those who understood well enough the problems but did not have the degree of research training necessary to apply adequate analysis. With this idea in

mind the initiators of the project, since its beginning in the fall of 1968, were careful to plan the project so that it could simultaneously have a great deal of impact upon vocational education researchers as well as upon research worthy problems in the area of vocational education. In the process of conducting the project, therefore, almost every graduate student enrolled in the Department of Vocational Education on a full time basis came in contact with the project in someway over the last six years. All research assistant as well as graduate assistant positions were filled with graduate students in the Department of Vocational Education. Not only did the project and its vast data bank provide a source for studies being conducted by graduate students, but it also provided a total resource to the department in terms of research expertise. Through the project the department faculty and graduate students became more proficient in research methodology and the application of the computer to research. Proficiency was also gained in the use of educational statistics, in the collection, coding, and processing data, and in the researcher to partitioner contact necessary to bridge the gap between practice and research. In addition to the use of graduate students for project activities a number of undergraduate students in the department were also employed on a part-time wage payroll basis and involved in such activities as data coding, data collection, graphics and illustrations and other research related tasks. Taken as a whole then, the VDS project has provided both financial and experiencial assistance in the educational process for many future leaders and possibly researchers in vocational education.

In addition to contributions made in the school systems involved and in the Department of Vocational Education at Penn State the project has also had an impact at the state level. Again, this impact might be best assessed by others than the VDS Project staff, however, some possible contributions are mentioned here. In terms of statewide and nationwide visability, the VDS Project has provided for the RCU, both through its report writing and through personal contact, stimulation of both basic and applied research activities. Evidence of the stimulation can be found in the number of request received for VDS monographs. While many of these requests have come from within the state of Pennsylvania many more have come from around the nation as well as from foreign countries. In providing the information contained in the 20 VDS monographs published to date, the project has helped to disseminate the results of recent studies as well as to give recognition to vocational education programs within the state of Pennsylvania. Overall, concerning contributions to the state, it can be said that if the findings of various studies conducted within the three school systems cooperating in the project have relevance for those particular school systems, then to the extent that those school systems are representative of other school systems in Pennsylvania the findings are also relevant to those other school systems. This rationale can, of course, be carried on to the national level.

Concerning national contributions all of the contributions discussed under previous areas have potential for application at the national level. Some specific national contributions which may have resulted from the project to date include the availability of statewide comparative data which can be used as a baseline for comparison with other states and with findings from

other research projects. Secondly, the project operating as it does as a cooperative adventure among the local educational agencies, the Pennsylvania State University and the state RCU, can and may serve as a model for vocational education research and for graduate education in other states. Thirdly, information obtained from the studies published to date dealing with the three basic topics of program evaluation, vocational guidance instrumentation, and the investigation of the vocational development process must be viewed in a national context if this type of information is to accumulate in sufficient amounts to have an impact on the state of the art in vocational education as well as in education as a whole. Much of the background behind the Career Education movement stemmed from local and statewide research efforts in the above mentioned areas. Another possible contribution the VDS project may have made at the national level involves the use of advanced research tools and statistical methodologies such as discriminate function analysis and path analysis for use in vocational program evaluation and vocational guidance.

Contributions of all of these types are only possible when a sufficient number of individuals possessing a sufficient amount of talent and resources are available over an extended amount of time to form the critical mass necessary to undertake a large venture such as a ten year longitudinal study. In the history of educational research, the number of projects of this magnitude are few and many of their contributions are unique. Whether or not these contributions are real or imagined will become much more evident in the future as the school systems involved begin to apply knowledges obtained

through the project, as other school systems begin to apply and extend the findings of the project, as graduate students who have gained their experiences through the project move into leadership roles in vocational education, and as the mountains of data already collected are analyzed over the next five years.

APPENDIX A

VDS PROJECT

Department of Vocational Education
Pennsylvania State University

April 15, 1973

Greetings from the VDS Staff:

When you and your fellow classmates were in the ninth grade in Altoona, the Department of Vocational Education at Penn State asked you to cooperate in a ten year study. We call this study the Longitudinal Vocational Development Study or VDS Project. Perhaps you remember meeting with us in ninth grade and then again in tenth and twelfth grades. At these meetings you were asked to take several tests and answer a number of questions about your future occupational and educational plans.

Now that you are out of high school, we want to find out what you are doing. With the information you send us this time and the information you previously gave us, we will be able to discover many important things about your high school experience. These results will help the Altoona School System to do an even better job and enable the VDS Project to provide schools throughout the state with information they can use in making changes in their programs.

In conducting this study, we are cooperating with the Altoona School System and the State Department of Education in Harrisburg. We can assure you that all of the information you give to us is strictly confidential and will only be used on a group basis to describe your class. I'm sure you can imagine how difficult and costly it is to conduct a ten year study. You can also understand how important it is that we get complete and accurate information from everyone.

As a reward for your time and effort, we are enclosing a useful gift--a combination key chain screwdriver. The best gifts are yet to be awarded! Because of your continued participation the following prizes will be awarded at a drawing to be held in June.

1	First Prize	- a 16" Zenith portable color TV
6	Second Prizes	- Channel Master AM/FM clock radios
35	Third Prizes	- two tickets to a Sunday, Pittsburgh Pirates Double-header in July

There are 42 prizes in all. To be eligible for the drawing you will need to fill out the enclosed yellow card. Some of your high school class

officers have expressed an interest in arranging a bus trip so that you can travel together to the game. Each winner will be notified near the end of June.

Before filling out the questionnaire, please read the following instructions. The entire questionnaire should only take about 15 minutes to complete.

1. The questionnaire is made up of Parts A, B, C and D. Everyone should fill out Part A. Begin by filling in your name and social security number. Answer all questions in the numbered order which they appear.

2. Use only a No. 2 pencil; one is provided for your convenience. If you decide to change an answer, be sure to erase completely.

3. After completing Part A, fill out only one of the remaining three Parts according to the directions at the end of Part A. You may have some difficulty deciding which Part to fill out, but use your best judgment. If you are working and going to school, decide which of the two you consider to be your full-time activity. If you are a housewife or in the military, fill out the Part you feel applies to you. Whichever Part you choose, be sure to fill it out completely. Remember, of Parts B, C and D, fill out only one Part.

4. For those filling out Part C, be sure to complete the second side beginning with question number 11. (Do not confuse it with Part D which also appears on that side.)

5. When you have completed the questionnaire, fold it and return both pages along with your yellow prize card in the stamped envelope addressed to the VDS Project.

6. If you have any additional comments you wish to make, you can include them on a separate sheet of paper.

7. If you would like any further information about the project, you can call us collect at (814) 865-3470 or visit us here at Penn State in Room 247 Chambers Building.

Thank you for your cooperation throughout these many years. Good luck in the drawing!

Sincerely,

Jerome T. Kapes

Jerome T. Kapes
Assistant Professor
of Vocational Education
VDS Project Director

JTK:pk
Enclosures

TWO STANDARDIZED QUESTIONNAIRE FORMS PUBLISHED BY PENNSYLVANIA STATE UNIVERSITY, DEPARTMENT OF VOCATIONAL EDUCATION, HAVE BEEN REMOVED BECAUSE THEY ARE COPYRIGHTED.

VDS PROJECT

Department of Vocational Education
Pennsylvania State University

May 7, 1973

Greetings again:

Approximately three weeks ago, the VDS Project staff sent to you a packet of materials including a questionnaire. Since we have not received your response to our first request we are sending along a second set of materials minus the pencil and free gift included in our first mailing. We are not sure why you have not responded as of yet, but in case you have misplaced your questionnaire and yellow card used for the drawing of prizes, we are sending a second set.

Although many of your Altoona high school classmates have already returned their questionnaire, it is still very important that we hear from you. Only in this way can we be sure that we have obtained correct information about all of the Altoona High School Class of 1972.

Again, I remind you of the prizes we will be awarding through the drawing which will be held in June. I would like to point out that your chances of winning a prize are very good; approximately one person out of every twenty of those responding will win prizes. Be sure to return the enclosed yellow card to be eligible for the drawing. Thank you again for your cooperation.

Sincerely,

Jerome T. Kapes

Jerome T. Kapes
Assistant Professor
of Vocational Education
VDS Project Director

JTK:pk
Enclosures

P. S. If you have already sent in your questionnaire, please disregard this second request.

As a member of the
Altoona Class of 1972
the Vocational Development
Study at Penn State has a
special interest in your future.

Hello,

The Vocational Development Study began its association with the Altoona High School when you were in the ninth grade. Because the research could be valuable for schools throughout Pennsylvania, we have the support of the Pennsylvania Department of Education as well as your alma mater in following the progress of your class for the next several years.

Of course, your cooperation is fundamental to our overall success. Since we will be contacting you in the spring of 197 and in coming years, we need to have up-to-date addresses. If the address used for this letter is outdated, please fill out the information below, place a stamp on the other side of this card and drop it into a mail box.

THANK YOU
VDS Staff

New ADDRESS

Name:_____

Street:_____

City:_____ State_____ Zip Code___

THIS TICKET WILL BE USED IN THE DRAWING FOR PRIZES. PLEASE COMPLETE AND ENCLOSE IT WITH YOUR QUESTIONNAIRE.

NAME

STREET ADDRESS

CITY STATE ZIP CODE

PHONE

Hello,

The Vocational Development Study began its association with the Altoona High School when you were in the ninth grade. Because the research could be valuable for schools throughout Pennsylvania, we have the support of the Pennsylvania Department of Education as well as your alma mater in following the progress of your class for the next several years.

Of course, your cooperation is fundamental to our overall success. Since we will be contacting you in the spring of 197 and in coming years, we need to have up-to-date addresses. If the address used for this letter is outdated, please fill out the information below, place a stamp on the other side of this card and drop it into a mail box.

THANK YOU
VDS Staff

New ADDRESS

Name:_____

Street:_____

City:_____ State_____ Zip Code___

THE PENNSYLVANIA STATE UNIVERSITY - DEPARTMENT OF VOCATIONAL EDUCATION

VOCATIONAL DEVELOPMENT STUDY TWELFTH GRADE QUESTIONNAIRE

DIRECTIONS:

This questionnaire has two parts. The first part asks questions which will help us locate you for the first year post-high school follow-up. The second part asks questions about your current views of your high school experience and your expectations for the first year out of high school. Write or check an appropriate response as necessary.

Several of the questions in Part Two require you to blacken one number of the five possible numbers (1, 2, 3, 4, 5). Number 5 represents the highest rating you can give an item; and the 1 represents the lowest rating possible. Be sure to blacken only one number for each item, and please answer every item.

Remember, this is not a test. You can help us and future students by making your responses as clear and accurate as you can. All of your answers will be confidential. PLEASE FEEL FREE TO ASK QUESTIONS.

THANK YOU FOR YOUR TIME AND COOPERATION

PLEASE RESPOND TO ALL ITEMS

Part I

Biographical Data

Full Name _____
Last First Middle

Social Security Number _____ Birth Date _____
Month Day Year

Current Mailing Address:

Street _____

City _____ State _____ Zip _____

Name of Parent or Guardian _____

If the above address is NOT the same as your parent's, give parent's address:

Street _____

City _____ State _____ Zip _____

Career Data

If it were possible for you to enter any occupation, what occupation would you most like to enter? _____

In reality, what occupation do you expect to enter after you complete all the education you have planned? _____

Do you feel that your high school program is related to the occupation you really plan to enter? ____Yes ____No

Are you currently enrolled in the same program you were when you entered the tenth grade? ____Yes ____No If no, why has your program changed?

_____

For Staff Use Only

If you could do it over, would you choose the same program you were in when you entered the tenth grade? _____Yes _____No If not, what program would you now select? _____

Do you plan to continue your education sometime in the future? ___Yes ___No
If so, how long will it be before you start? Year_____ Month_____

Are there any other factors which will affect whether you get any further training and education? ____Yes ____No If so, what are they? _____

_____

_____

What is the greatest obstacle which prevents you from doing what you would like to do in the next year? _____

_____

_____

High School Comments

Name some things you liked and some things you disliked about high school.

Liked _____

_____

Disliked _____

_____

Give some suggestions which you feel would improve your high school for future students. _____

_____

Part II

The purpose of this part of the questionnaire is to give you a chance to express your feelings about your school, education, work values and other pertinent data. On the basis of your responses and those of your classmates, we hope to get a better understanding of high school students' views of their high school experience and expectations for the future.

A green response sheet is provided for this part. Print your name in the space provided at the lower left hand corner only. Do not blacken any spaces at the top of the page.

Decide how you feel about each statement and rate it appropriately using the following choices:

Low . . . . . 1 = A
Moderately Low. . . . . 2 = B
Average . . . . . 3 = C
Moderately High . . . . . 4 = D
High. . . . . 5 = E

READ EACH STATEMENT CAREFULLY

SCHOOL RATING: Rate your school from low to high on each of the following factors by blackening a number from one to five on the green response sheet.

low				high	
1	2	3	4	5	1. Variety of programs offered.
1	2	3	4	5	2. Status of your program among the other programs.
1	2	3	4	5	3. Quality of instruction.
1	2	3	4	5	4. Interest your teachers have shown towards you.
1	2	3	4	5	5. Opportunity to do individual study.
1	2	3	4	5	6. Providing the kind of educational experience you expected.
1	2	3	4	5	7. Opportunities for student involvement in program decisions.
1	2	3	4	5	8. Flexibility to adjust to meet your special needs.
1	2	3	4	5	9. Relevancy of class content.
1	2	3	4	5	10. Ease of access to a guidance counselor.
1	2	3	4	5	11. How well your guidance counselor knows you.
1	2	3	4	5	12. Usefulness of the information you get from guidance counselors.
1	2	3	4	5	13. Your degree of satisfaction with your overall high school experience.

EDUCATION: Whether or not you are planning any further schooling, HOW IMPORTANT would each of the following factors be in your seeking additional training or education? Rate the importance of each factor to you by blackening a number from one to five on the green response sheet.

Importance low				high	
1	2	3	4	5	14. Encouragement received from teachers and counselors.
1	2	3	4	5	15. Encouragement received from parents and friends.
1	2	3	4	5	16. Parents' ability to finance your education.
1	2	3	4	5	17. Your ability to earn enough money to help finance your own education.
1	2	3	4	5	18. The opportunity to obtain financial support from the school or an outside agency.
1	2	3	4	5	19. Being sure about the kind of additional education you want.
1	2	3	4	5	20. Getting the education to provide for a good standard of living.
1	2	3	4	5	21. High school grades.
1	2	3	4	5	22. High school program.
1	2	3	4	5	23. The odds on getting the kind of job you want with a high school diploma.

WORK VALUES Rate the DEGREE OF IMPORTANCE of each of the items below when you are thinking about your first full-time job by blackening a number from one to five on the green response sheet.

Importance low				high	
1	2	3	4	5	24. Prestige of the job.
1	2	3	4	5	25. Opportunity to work independently.
1	2	3	4	5	26. Salary paid.
1	2	3	4	5	27. Assurance against being laid off or fired in the future.
1	2	3	4	5	28. Being able to commute from current address.
1	2	3	4	5	29. Amount of preparation and skill required.
1	2	3	4	5	30. Opportunity to direct the work of others.
1	2	3	4	5	31. Finding work far enough away that you will need to move from present address.
1	2	3	4	5	32. Number of openings or demand for people in the line of work.

Importance

low high

1 2 3 4 5 33. Working conditions associated with the line of work.
1 2 3 4 5 34. Relatedness to what you have always wanted to do.
1 2 3 4 5 35. Being in a position to assist other people.
1 2 3 4 5 36. Number and variety of people with whom you will be dealing.
1 2 3 4 5 37. Number and variety of activities associated with the work.
1 2 3 4 5 38. Opportunity you will have for promotion.
1 2 3 4 5 39. Size of the company.
1 2 3 4 5 40. Geographical location of the community or company.
1 2 3 4 5 41. Interest and satisfaction you expect to obtain from your work.
1 2 3 4 5 42. Professional level of co-workers.
1 2 3 4 5 43. Opportunity for comapny support of further training and education.

SELF RATING: Rate yourself as compared to other seniors from low to high on each of the following factors.

low high

1 2 3 4 5 44. Scholastic ability.
1 2 3 4 5 45. Interest and motivation toward your studies.
1 2 3 4 5 46. Time spent on school work.
1 2 3 4 5 47. Satisfaction with your achievement in school.
1 2 3 4 5 48. Satisfaction with your program.
1 2 3 4 5 49. Involvement in school activities.
1 2 3 4 5 50. Persistence in getting a task done.
1 2 3 4 5 51. Knowledge of your strengths and weaknesses.
1 2 3 4 5 52. Knowledge of your interests and abilities.
1 2 3 4 5 53. Knowledge of different occupations.
1 2 3 4 5 54. Knowledge of post-high school educational alternatives.

FIRST YEAR ACTIVITIES: Of the following, blacken an A on the response sheet for those activities which you expect to be doing in your first year after high school. If you do not expect to be doing an activity in your first year after high school, blacken a B on the response sheet.

1 2 55. Get a full-time job.
1 2 56. Get a part-time job.
1 2 57. Attend a non-degree school of some type.
1 2 58. Attend a two-year college.
1 2 59. Attend a four-year college.
1 2 60. Join the armed services.
1 2 61. Join the Peace Corps, Vista, or Action.
1 2 62. Explore means other than work for financing further education.
1 2 63. Get married.
1 2 64. Get your own residence.
1 2 65. Maintain a residence with your parents.
1 2 66. Travel extensively.
1 2 67. Do a lot more dating and meeting of people.
1 2 68. Register to vote.

OCCUPATIONAL VALUES INVENTORY QUESTIONNAIRE PUBLISHED BY PENNSYLVANIA STATE UNIVERSITY, DEPARTMENT OF VOCATIONAL EDUCATION, HAS BEEN REMOVED BECUASE IT IS COPYRIGHTED.

Last Name _____ First _____ Middle _____ Number _____

Address _____ Phone _____

BIOGRAPHICAL INFORMATION

Father's Name (or Guardian) _____

Father's Education 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 16+

Father's Occupation _____

Father's Employer _____

Mother'a Maiden Name _____

Mother's Education 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 16+

Mother's Occupation _____

Mother's Employer _____

Number of Older Brothers _____ Sisters _____

Number of Younger Brothers _____ Sisters _____

Family Income -- If you have no objection, we would like you to estimate to the best of your ability how much income your family earns each yaar. If both parents work, then add these incomes together. Please circle the category in which your family falls. If you do not know, please indicate.

Do not know 0-$3,000 $3,000-$6,000 $6,000-$9,000 $9,000 and above

Subject Liked Best _____ Least _____

Subject Which is Hardest _____ Easiest _____

Have you ever repeated a grade? _____ If so, which one? _____

THE VOCATIONAL PREFERENCE INVENTORY, DEVELOPED BY JOHN L. HOLLAND, HAS BEEN REMOVED BECAUSE IT IS COPYRIGHTED.

VOCATIONAL DEVELOPMENT INVENTORY ATTITUDE SCALE, WRITTEN BY JOHN O. CRITES, HAS BEEN REMOVED BECUASE IT IS COPYRIGHTED.

L. Name _____ First _____ MI _____ No. _____

Occupational Choice → (I) _____ (R) _____

Explain Discrepancy _____

High School Course of Study → (I) _____ (R) _____

Explain Discrepancy _____

College Yes or No → (I) _____ (R) _____

Explain Discrepancy _____

Please indicate hobbies, interest, and school activities on other sl

Name _____ No. _____

APT _____ AR _____ N _____ S _____ LE _____ NV _____ AR-N _____ V-Y-VC _____ TOT _____

CTMM _____ Bel _____ A IQ _____ NL IQ _____ T IQ _____

CAT _____ RV _____ RC _____ DR _____ AR _____ AF _____ CA _____ ME _____ SP _____ TL _____ TOT _____

DAT _____ VR _____ NA _____ AR _____ SR _____ MR _____ CL _____ SP _____ SEN _____

KUDER _____ O _____ M _____ C _____ S _____ P _____ A _____ L _____ M _____ SS _____ C _____

Course of Study Code _____ 9th _____ 10th _____ 11th _____ 12th _____

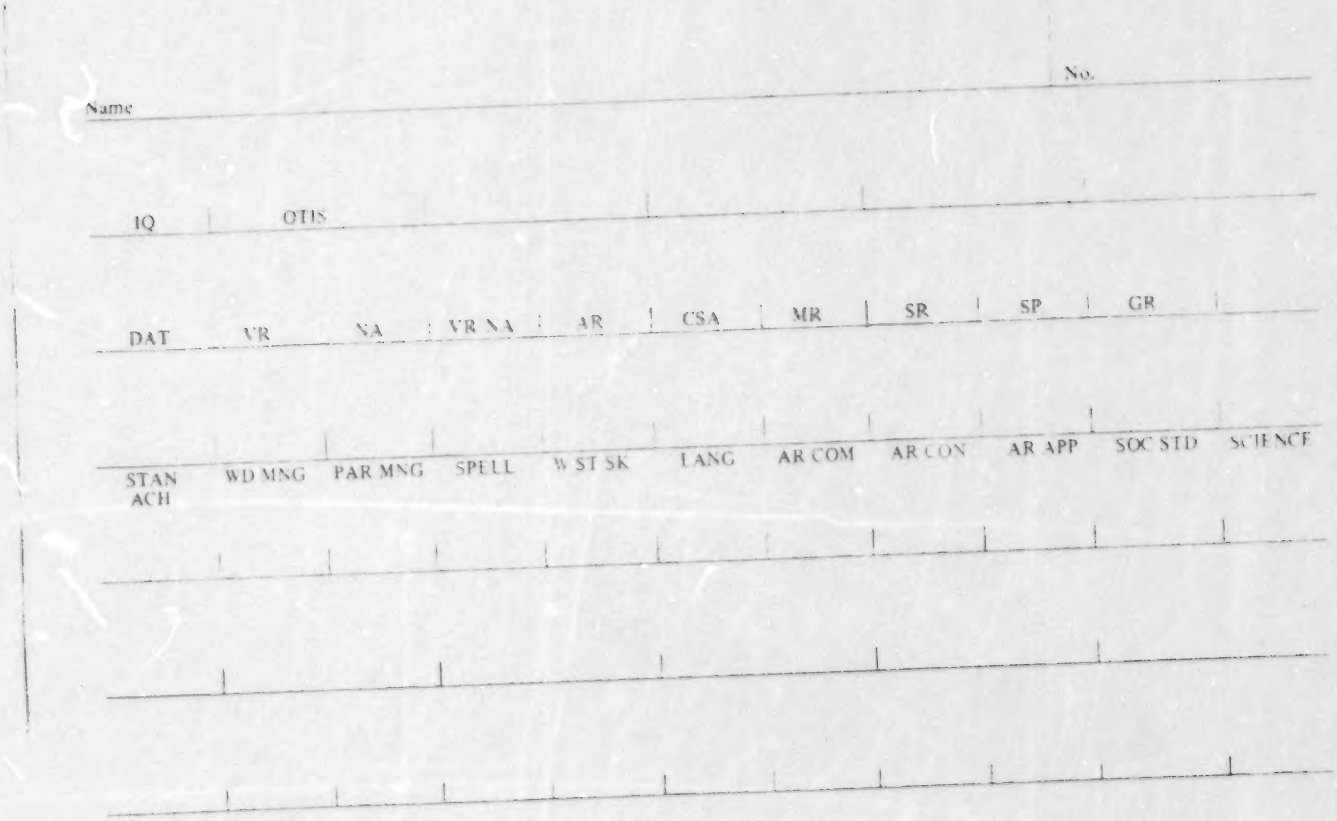
Grades	7	8	9	
Math				
Science				
English				
Social Studies				
Shop				
GPA				
Tardy				
Absent				

Traits — JH _____ Poor _____ Sat _____ Excel _____

Physical Defects _____

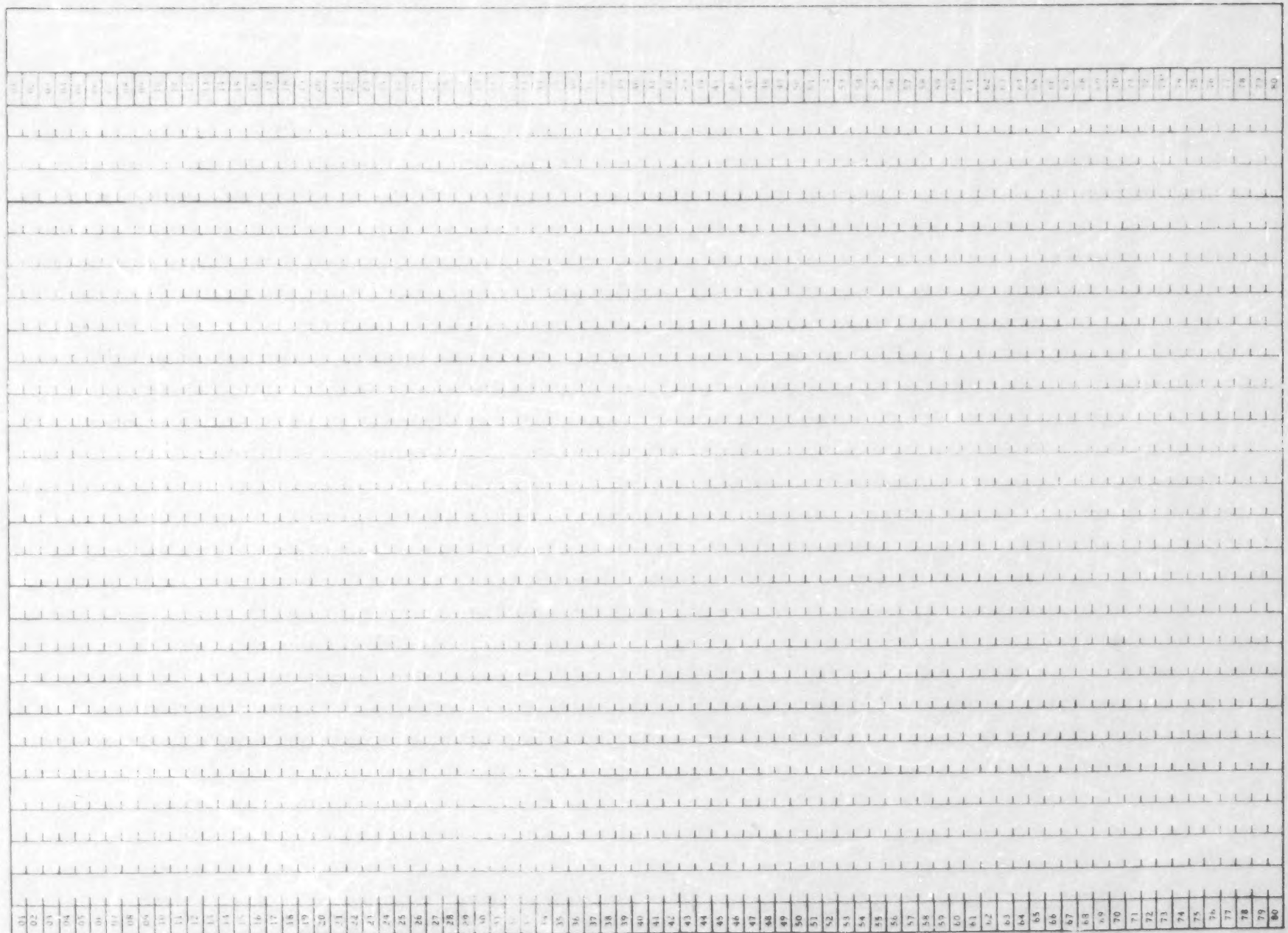
PAGE FORM C 1 OF THIS DOCUMENT HAS BEEN REMOVED BECAUSE IT CONTAINED COPYRIGHTED MATERIAL.

(STANDARDIZED QUESTIONNAIRE FORM PUBLISHED BY PENNSYLVANIA STATE UNIVERSITY, DEPARTMENT OF VOCATIONAL EDUCATION.)


Name
No.
IQ
OTIS
DAT
VR
NA
VR NA
AR
CSA
MR
SR
SP
GR
STAN ACH
WD MNG
PAR MNG
SPELL
W ST SK
LANG
AR COM
AR CON
AR APP
SOC STD
SCIENCE

PSU

CARD FORM LAYOUT



170

Appendix B contains the three magnetic data tapes and the data tape layout. Since it is impractical to include a copy of the contents of Appendix B with each copy of this report, one copy was furnished to the sponsoring agency and is on file with, The Director, The Research Coordinating Unit, Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.

Appendix C contains copies of convention papers written as a result of the involvement of the authors with the VDS project. Since Appendix C is lengthy, one complete copy is furnished to the sponsoring agency, and is on file with: The Director, The Research Coordinating Unit, The Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.

The following is a list of titles of the papers contained in Appendix C.

1. Exploring the Use of the Ohio Trade and Industrial Education Achievement Tests, AVA Convention - December, 1970
   by: Thomas E. Long and Jerome T. Kapes

2. The Ipsativity Problem in Work Values Measurement and Possible Solutions, NERA Convention - November, 1971
   by: Jerome T. Kapes

3. Longitudinal Career Development Research and Implementation: A Cooperative Approach, AVA Convention - December, 1971
   by: Daniel A. Clark, Joseph T. Impellitteri and Jerome T. Kapes

4. Occupational Values in Adolescent Development, APGA Convention - March, 1972
   by: Joseph T. Impellitteri

5. Longitudinal Career Development Research and Implementation: A Cooperative Approach, PSCA Convention, March, 1972
   by: Joseph T. Impellitteri and Jerome T. Kapes

6. Using Ninth Grade Information for Tenth Grade Prediction, APGA Convention - March, 1972
   by: Jerome T. Kapes

7. The Relationship Between Selected Characteristics of Ninth Grade Boys and Curriculum Selection and Success in Tenth Grade, AERA Convention - April, 1972
   by: Jerome T. Kapes

8. The Longitudinal Vocational Development Study (VDS) Project: A Five Year Report, AVA Convention - December, 1973
   by: Jerome T. Kapes, Thomas E. Enderlien, and Patrick A. O'Reilly

Appendix D contains Tables 1, 2, 3 and 4 representing the number and percentage of responses to each item of the questionnaire for the Altoona one-year after graduation follow-up, by curriculum and sex for questionnaire parts A, B, C and D.

Appendix D is much to large to reproduce a number of times, therefore, one copy is supplied to the sponsoring agency, and is on file with, The Director, The Research Coordinating Unit, The Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.